

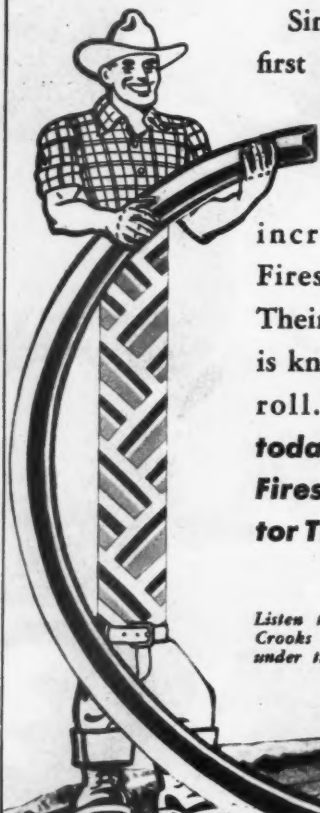


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• CONTOUR PLANTING ON THE FRUIT FARM—Pages 8-9 •

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**GROUND GRIP TIRES**  
**THAN WITH ANY OTHER MAKE**

WHEN a product wins and holds customer-preference year in and year out you know its leadership is established on merit. On every score, by every yardstick of value, it has met and passed the test of critical public appraisal.



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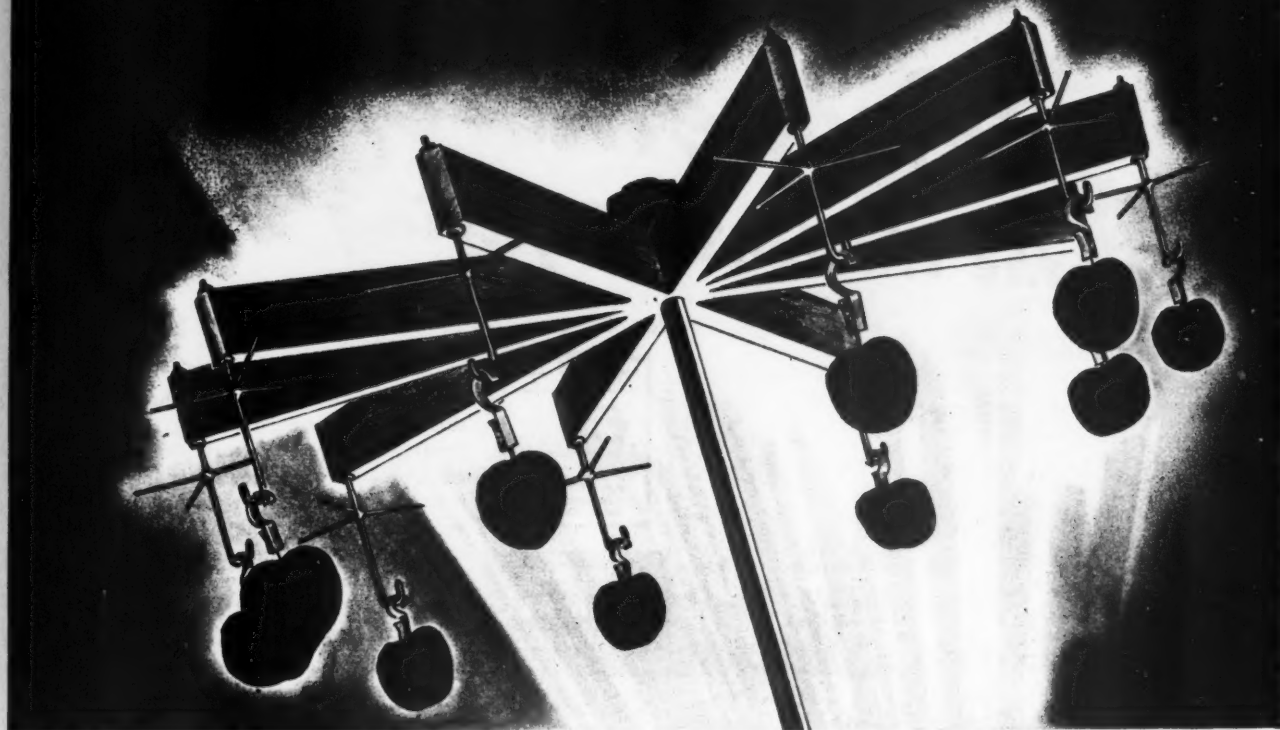
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Among Du Pont's special helps for growers are: "Fermate," a prom-

ising new fungicide of high effectiveness; Copper-A, a *safe* fixed-copper fungicide; "Sulfuron," a micro-fine *wettable* sulfur, a *protective* fungicide; and Du Pont "Ammate" weed killer, a fire-and flame-proof chemical that usually kills noxious plants like poison ivy with one treatment.

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## Prime Mover ...for the Nation's Fighting Farms!



Cultivation like this is an outstanding FARMALL job. Notice how the plants, even at this height, are not damaged by the equipment, yet cultivating is clean as a whistle.

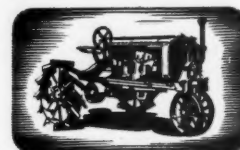
For more than two years this country has been arming, farming, and fighting its way to Victory. American farmers are working as they never have worked before to supply all the food that is needed for the nation, for the Armed Forces, and for our Allies. On their farms is more mechanized equipment than any other nation possesses!

Hundreds of thousands of tractors and all the machines that go with them are a major resource of the United States. They are proof of the fact that between two world wars this country armed its agriculture.

The foundation of this wartime armor is the FARMALL SYSTEM, a way of power farming practiced by more farmers than any other method. The heart of this system is the sturdy FARMALL Tractor, the *prime mover* on power jobs throughout rural America. For twenty years it has been the most popular tractor for one basic reason. The FARMALL design makes possible the most efficient working units of machines and power for farms of every size and kind.

There will be more new FARMALLS this year, but still not enough to go around. Your International Harvester dealer will help you work out the most efficient way to raise more of the food that fights for freedom. He's your supply man for the entire FARMALL SYSTEM.

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### 20th Anniversary of the FARMALL IDEA

This is the tractor that was designed at the start as the *power* half of an implement-tractor unit. Every improvement in 20 years of constant development has increased the efficiency of the implement-tractor team. Today the FARMALL leads because it powers the most productive mechanized team on farms everywhere.

**It's FARMALL**  
THAT LEADS THE WAY **TODAY!**





E. G. K. MEISTER, *Publisher*

## BASKET SHORTAGE IS SERIOUS

**G**ET busy at once in the matter of obtaining baskets and other wooden containers for the coming season's fruit crops. This is the best advice we can give to fruit growers, not fortunate enough to have their full supply of baskets already on hand.

Foresighted fruit growers have already been endeavoring to accumulate their needed supplies of baskets. Many, finding that their regular sources of supply are unable to fill orders, have gone far afield in an effort to purchase baskets, or other wooden containers, new or second-hand. And not everyone has been successful in finding an adequate supply for the basket shortage is serious.

If fruit crop yields are normal, wooden container materials will be short of the demand by 10 to 20 per cent. For example, if the 1944 tree fruit crop is equal to the 1942 crop, 16 million more baskets will be needed than actually were used in 1943. But new fruit baskets will not be available to that extent in 1944.

The reason is that there is a general scarcity of commercial wood and lumber products. Heavy military demands for containers, a more than 200 per cent increase since 1942 in the use of lumber for packing and shipping, and a serious falling off in lumber and pulp wood production, are the principal reasons. That shortage, according to Washington, makes it difficult to secure more new containers for civilian use.

Washington also says that salvage and re-use of second-hand fruit containers seems to be the only answer for this year.

Use of second-hand baskets and other wooden containers has already been accepted as a wartime condition by many fruit growers, in an effort to relieve the situation. But the use of second-hand containers for fresh fruits as a general practice is, we believe, detrimental to the standards of the fruit industry. We think this fact should be made known to Washington. Therefore, we suggest that, even though you are busy trying to find a supply of baskets, you take the time to write to your Congressman and urge him and his fellow Congressmen to investigate the situation. If enough fruit growers protest against this shortage, Congress may be able to do something about it, if not for this season, at least in time to prevent a repetition of the shortage in another year.

## FOR VICTORY



## BUY UNITED STATES WAR BONDS AND STAMPS

## NATIONWIDE NEWS

**C**IVILIAN supplies of canned peaches will be increased by about 750,000 cases before long. The peaches will reach some retail markets within a few weeks, about the time that fresh deciduous fruits are in lowest supply. The peaches will be made available through the release of part of the supplies owned and held by canners, but set aside for Government purchase.

This release of canned peaches is the second time the Government has been able to release additional supplies of this commodity to civilians. On November 2, 1943, the Food Distribution Administration announced the release of 900,000 cases of canned peaches.

It appears that the Office of Price Administration is anxious to make certain changes in the apple order, M.P.R. 426, as soon as possible, to discourage practices which are claimed to encroach on the wholesalers' margins, according to the National Apple Institute.

Among the proposed changes is an amendment eliminating L.C.L. and L.T.L. shipments by putting all sales on f.o.b. basis in the so-called f.o.b. states, except shipments by growers and shippers in their own trucks, to retail stores, institutions, or government procurement agencies.

★  
**A**CCORDING to the Office of Information of the United States Department of Agriculture, the farm equipment and supplies outlook is good. Authorized production during

(Continued on page 38)



An adequate, well-trained and well-supervised picking crew is needed during the harvest season in the strawberry fields.

**A** STUDY has been made of factors influencing the cost of producing strawberries in commercial plantings in Ohio. It is very evident from the records secured that production costs have increased decidedly during the war period. Therefore, it should be understood at the start that the costs recorded in this article are high compared to those prevailing in years when inflationary trends are less evident, and prices in general are lower. Although the individual grower can do very little to alter certain of his items of expense, it is well to have a clear picture of the situation in mind, particularly since price ceilings are expected to be in effect during the marketing season of 1944.

The cost of growing an acre of strawberries up to harvesting time varied from \$170.00 to \$504.00. The various items of expense were considered, and an average figure calculated which should be reasonably typical of good commercial strawberry plantations in Ohio. Table 1 contains these average figures and shows the approximate amount of labor and materials and the cost of each operation in producing an acre of strawberries



Irrigation of strawberries may mean the difference between profit and loss in seasons of drouth.

in 1943-44.

The cost of soil preparation and planting was fairly uniform among the various growers. The expense for plants varied considerably, depending upon the number set per acre and whether the plants were home-grown or purchased.

A number of growers spent exces-

sive amounts of money for fertilizer or manure. Fertilizer tests with strawberries conducted by Experiment Stations in eastern and mid-western States have indicated that on good soils strawberries do not respond profitably to the application of large amounts of fertilizer. An application of 10-20 tons of manure per acre at the time the soil is prepared is probably the most profitable and economical treatment which can be used for strawberries. A nitrogenous fertilizer such as nitrate of soda or ammonium sulfate applied in early August at the rate of about 200 pounds per acre is frequently profitable, especially on the lighter, less fertile soils.

The cultivation and hoeing of the strawberry plantation is very essential, and should be continued throughout the season following the setting of the plants. Strawberries cannot compete successfully with weeds.

(Continued on page 18)

Table 1: Cost of Growing Strawberries in Ohio 1943-44

Item	Man labor @ 60c/hr	Truck, tractor or team @ 1.25/hr	Horse or garden tractor @ 50c/hr.	Cost
Soil preparation .....	15	15		\$27.75
Plants, 7,000 @ \$10.00.....				70.00
Fertilizer and/or manure.....				28.00
Establishing plantation .....	35	2		23.50
Cultivation, 6 times .....	30		30	33.00
Hoeing, 4 times .....	80			48.00
Straw for mulch, 3 tons @ \$10.00.....				30.00
Applying and removing mulch.....	30	5		24.25
Land and equipment (2 years) .....				32.50
Interest on investment .....				15.00

Total growing cost

\$332.00





Buckwheat in alternate rows as a summer covercrop.

U.S.D.A. photo



Above is a Catawba vine that has been trained to a high renewal system and pruned to not more than 20 buds. Vineyards so handled have yielded up to four tons per acre.

# THE GROWING OF AMERICAN GRAPES

By WILLIAM K. STEUK, Viticulturist  
Ohio Agricultural Experiment Station

AMERICAN grapes are those varieties derived from several wild native species and hybrids between themselves and also with the European or California type. The most familiar varieties are Concord, Catawba, Niagara, and Delaware. Growing of American grapes in the commercial areas of New York, Pennsylvania, Michigan, and Ohio is a combination of old-fashioned and modern vineyard practices and methods. Such things as may be called old-fashioned are still being followed because they have proven to be the best. However, others should be modified or changed in the light of our present knowledge.

The grape varieties now grown are distinctly old-fashioned, and it truthfully can be said, they have passed the "test of time." The four most important kinds with their dates of origin or introduction, and number of years since that date, are listed:

	Date of Origin or Introduction	Years Since Originated or Introduced
Catawba	1802	142
Concord	1844	100
Delaware	1849	95
Niagara	1868	76

Commercial growing of American grapes started with the Catawba and still after 142 years this grape is one of the four most important. The Concord since its introduction has never been challenged in its position as the most popular grape. There is no other to excel the Delaware in quality and the Niagara has never been displaced as the leading white

variety. Can it be the early viticulturists soon obtained varieties that were without faults and left no room for improvement?

This is hardly true. The Catawba ripens so late that its areas of commercial production are limited to the Finger Lakes region of New York and the Sandusky-Lake Erie Islands district of Ohio. The production of Delaware is low and the quality of Niagara and Concord is not of the best. Thousands of seedlings have been raised by amateur and professional plant breeders, yet not a single variety has been introduced that at this time seems destined to replace any of these four grapes.

A definite challenge exists to plant breeders to produce varieties superior to the old-fashioned sorts. If an order could be placed for varieties it would call for a Catawba ripening two weeks earlier, a Delaware twice as productive, and two heavy producing varieties, one blue and one white that would give yields comparable with some prolific California types without particular regard for quality.

There are a number of newer and little known grapes that have merit and many gain an important place in vineyards. The Fredonia continues to gain popularity for red wine and juice. The Ontario in addition to being an early dessert grape of good quality makes an excellent white wine with a delicate pleasing bouquet.

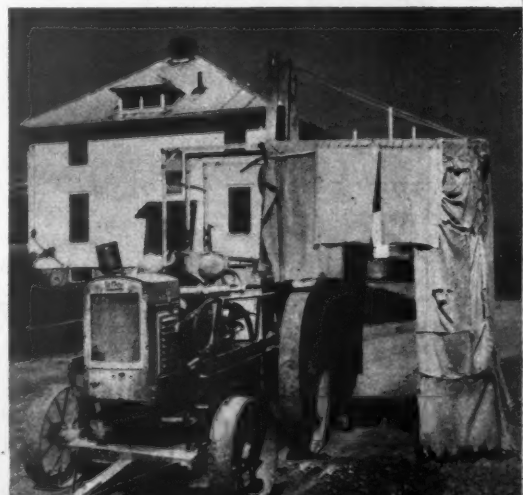
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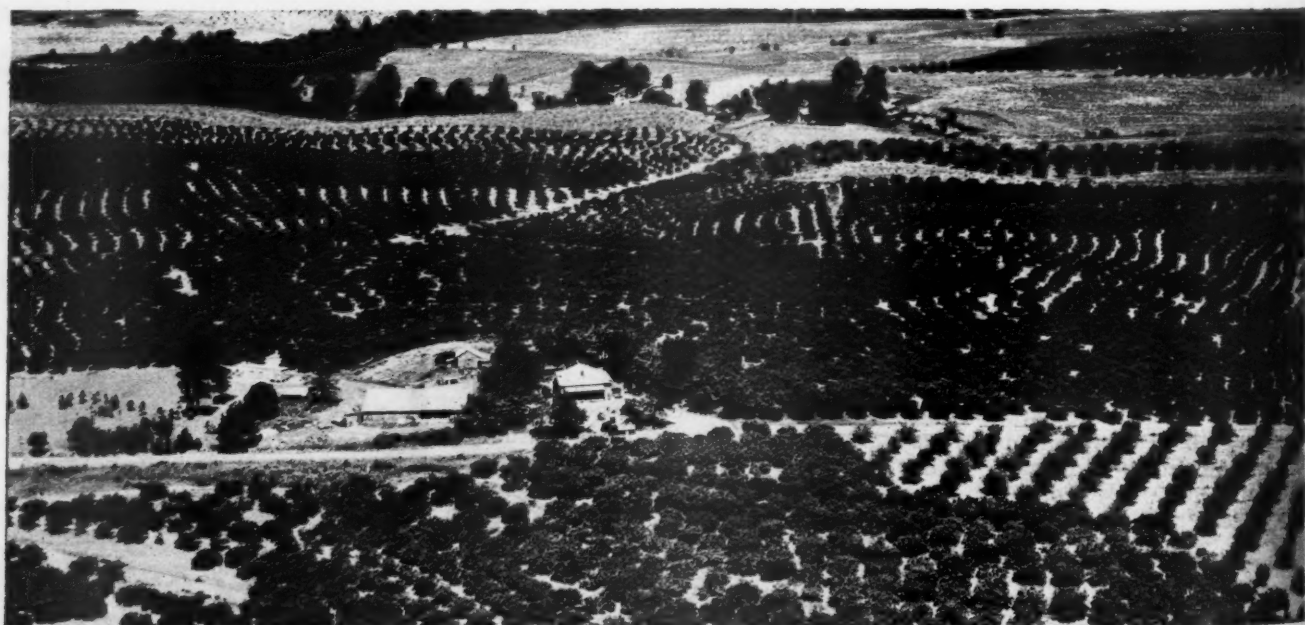
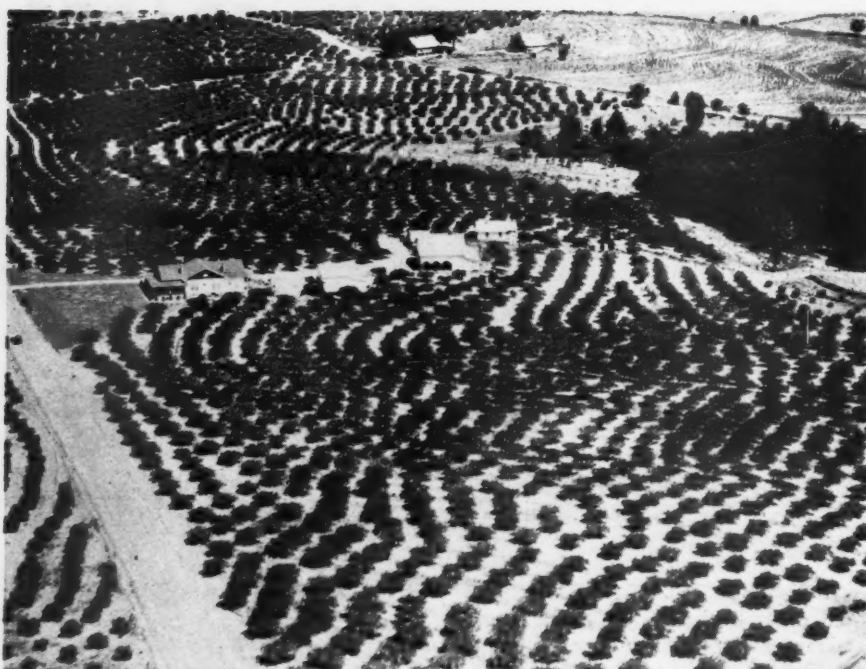
U.S.D.A. photo

Photographed above is the Ives variety, a productive variety of special value for red wine. This grape often yields four tons to the acre under very careful vineyard management.

A homemade covered vineyard spray boom that has been in use for the past three seasons and that has given satisfactory results.







## MATURE CONTOUR PLANTINGS

Contour planting was an old practice before large scale fruit growing developed in the Southeast. On this page are shown pictures of peach orchards planted on the contour from 15 to 20 years ago.

Photograph, top of page, shows the Blackwell Bros. Orchards at Inman, S. C. Here the 15-year-old trees are planted on the contour.

Left, another view of the Blackwell Peach Orchard in Spartanburg County. Note contour planting, modern buildings and highway.

Photograph below shows 18-year to 20-year old trees planted on the contour. Upper part of the picture shows the T. C. Tinsley Orchard, Inman, S. C., while the lower section of the photograph shows the E. L. Blackwell Orchard.

Photograph  
Nichols

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AMERICAN

Photograph, right, shows broad channel and Nichols terrace on right in a contour planted peach orchard.



## CONTOUR PLANTING FOR FRUIT FARMS

A. M. MUSSER,

Horticulturist, South Carolina  
Experiment Station

IN the southeastern states of North Carolina, South Carolina and Georgia heavy rains may occur during any month of the year. The surface of the soil is seldom frozen and winter precipitation is generally in the form of rain, very occasionally as snow. In the upper parts of these states (or at other locations having similar conditions) where the land is hilly or gently to steeply rolling, erosion has occurred and will continue to take place on cultivated slopes.

The amount of soil washed from any particular field will depend upon (1) the kind of crop growing, (2) length and steepness of the slope, (3) the length of the cultivation period, and (4) the intensity and the amount of rainfall. Fields planted to grass, grain, legumes, or any other closely planted crops lose smaller amounts of soil than plants set at greater distances such as tree, vine or cane fruits. In addition, fruit crops are cultivated on most soils for a considerable part of the growing season, thus providing ideal conditions for loss of soil.

It is common knowledge that millions of acres of land in the United States are unfit for most or all agricultural purposes because of excessive soil erosion. This loss of land for the production of food, feed and fiber crops is serious enough during ordinary times but during war times it becomes doubly serious. For the individual farmer or fruit grower it often becomes a calamity. Because if



Above is a peach orchard showing ridge plowed to form terrace since the orchard was planted. Channel has fair capacity but it has much less than channel of a Nichols terrace.

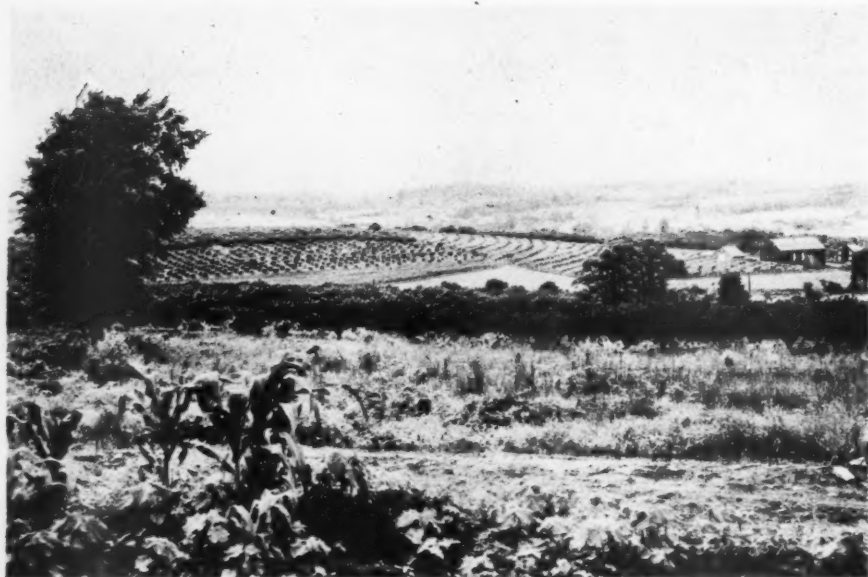
soil erosion proceeds far enough, he must sell or give away his almost worthless land; move to a new place and start all over, provided he is still financially able to do so. While there is just so much land in the United States that can be used for agriculture, more land than is now being cultivated can be obtained by large scale irrigation or drainage projects so that from a national standpoint we usually do not think of land being limited to any great extent. For the average farmer and for the individual fruit grower, however, the situation is decidedly different. All or part of the land the fruit grower owns may

offer suitable sites for fruit crops. Slopes are generally preferred in most parts of the country because of the protection they offer against frosts although such sites are most affected by soil erosion. If the owner is to make a profit from his fruit crops, he must prevent the loss of the more-or-less fertile topsoil. In doing this he preserves the site for agricultural purposes when the orchards are removed.

Up to the present the best method of preventing loss of soil by water erosion is by laying out contour lines at varying intervals, depending upon the slope, and by building terraces on

(Continued on page 30)





General view of the Gardenhour orchard near Smithsburg, Maryland. Cover crops of Italian Rye Grass and Vetch are used on entire 200 acre tract; 164 acres of orchard are terraced.

## MARYLAND GROWER GOES THROUGH DROUGHT WITH BIG PEACH CROP

By JOHN COTTON

**A**LTHOUGH using cover crops in orchards is not convenient, according to G. William Gardenhour of Smithsburg, Maryland, he is not farming for his convenience—"I am farming to make a good living in the most economical way."

The use of cover crops as the basis of good soil management has proved its value many times on this 200-acre fruit farm which lies in the northern part of the Maryland Appalachian Apple belt. This extra fertility and good humus content in the soil paved the way for the Gardenhour fruit farm to go into the drought and pro-

duce the most profitable crop of peaches ever produced in the seventy-five years since Gardenhour's grandfather bought the place.

In mid-summer, when fruit men in the vicinity of Smithsburg were complaining about the drought, Gardenhour had no drought problem on his farm. In fact, his early peach crop, Golden Jubilee, was the largest in size and quantity he ever had produced. This crop came in during the early stages of the drought.

He estimates that cover crops made him more than \$150 an acre on his five-acre block. It is no wonder that

cover crops are used on the Gardenhour farm without much thought to the extra work or cost of the seeding.

As the season progressed and there were no signs of any let-up in the drought, his peaches didn't get so large; not so many of them attained more than two-inch size. Even at that, with the spread in the price between the 1¾-inch peach and 2-inch peach, there is no question that cover-cropping, or plenty of organic matter in the soil, does pay dividends. In addition, the more bushels of 2-inch peaches also added to his cash returns.

The extra moisture supply stored in the soil netted this farm several thousand dollars in one year's time.

Good soil fertility on this farm enabled Gardenhour to survive a late frost at blossom time that nipped the young peach buds on a great many farms in this vicinity. Most fruit men, as the result of this frost, lost most of the peach crop the very year they could have made a much-needed profit with the high prices peaches were bringing. The Gardenhour farm had three-quarters of a normal crop.

University of Maryland field men state that because of the good healthy terminal growth that he got last year Gardenhour's trees could come through this freeze without losing the entire crop. In this way cover crops, good fertility and good humus content in the soil actually helped prevent freezing.

Production of a good peach crop this year under adverse conditions by Gardenhour was not a matter of luck. It had its beginning eight years ago when he became alarmed about his top soil losses. He explains that his soil losses were no worse than most orchards yet every year almost unnoticed he lost small quantities of this valuable top soil through sheet erosion. At this time he had no gullies on the farm yet he realized his top soil was leaving in layers after each rain. He had only to look at the run-off water in the stream running off his farm to realize this.

Even good fertilizing practices would not keep some of his trees at their maximum production. Those trees that were in the bottoms or at the tops of the hills or where most of the top soil was left, had no difficulty. They produced bumper crops. He realized that if the whole orchard produced equally as well, his yields would go up with very little additional cost.

Fortunately, the County Agent was trained in soil technology. Not only had he a master's degree in soil technology received from the University of Wisconsin, but he had farmed cotton on the contour and had built terraces

(Continued on page 33)

Terraces in Maryland peach orchard save soil moisture and prevent top soil losses and promote good tree growth and higher yields.





# THE SPRAY FRONT IN '44

By ERIC G. SHARVELLE  
University of Minnesota



"Spraying measure should be closely tailored to local requirements."

THE American people will need all of the fruit that can be produced in 1944. Under present conditions it is particularly important to attain maximum production. This will be possible only if plant diseases and insect pests are adequately controlled through sanitation and proper spraying. Although spraying has long been a regular practice in most commercial orchards, there is special need to make it just as economical and efficient as possible in the coming growing season. Although details must vary with regions and localities, a number of general principles are universally applicable and an attempt is made in this article to emphasize these principles on the basis of recent discoveries.

Since the introduction of Bordeaux mixture between 1885-1895, spraying with protective chemicals has become one of the chief weapons in man's bulwark of defense against the ravages of fungus, bacterial and insect pests of fruit crops. In normal times, perhaps, many fruit growers have depended very largely upon chemical protection of their fruit crops and may not have taken full advantage of other simple means of reducing the incidence of fruit pests. In 1944, however, a maximum fruit production is expected from the American fruit grower, and every means must be used to make this task easier during times which will undoubtedly be very difficult.

The spraying job for 1944 can be made a great deal easier if the grower starts with a clean orchard in the spring. Most disease organisms and insect pests can only live through the

winter on previously diseased fruit or fruit parts, as for example the apple scab fungus, which lives over on fallen overwintered leaves. From sources such as these the disease will start again in the spring to cause losses as great or even greater than it did in 1943. Anything which can be done to reduce the chances of these varied fruit diseases and insects from becoming established will make the spraying job that much easier and more effective. A good beginning for the coming season therefore would be a cleanup campaign to eliminate as much as possible the sources of infection for the common diseases and insects.

Fruit trees, like human beings, are more resistant to many diseases if they are healthy and thriving; accordingly, good orchard cultural practices will serve as another aid in putting over the spray program in 1944.

In pre-war days the American fruit grower produced high-grade fruit for home consumption, but in 1944 there is a special reason why every effort should be made to maintain these standards. During the coming year the national food situation will unquestionably remain acute. Even though there will not be an actual food shortage such as many of the occupied countries will experience,

the national diet may become even less varied than it is at the present time. The monotony of a straight cereal diet can be greatly relieved by the variety which fresh fruits can provide. The 1944 fruit crop will be in great demand by the American housewife as a welcomed means of adding variety to the daily meal. In addition, the protective value provided by the vitamin "C" content and high iron value of most fruits will contribute in no small part to the maintenance of public emotional equanimity.

To produce a high quality volume of fruit in 1944 the pests of these crops must be controlled as simply and effectively as possible. In pre-war days, when labor and spray materials were abundant, the fruit grower had relatively little difficulty in maintaining an adequate spray program. In 1944, conditions will not be normal, especially for the American fruit grower. Unquestionably, labor will be decidedly scarce, especially the skilled agricultural type of labor required by the commercial fruit grower. Very little new spray machinery will be available and old spray equipment will have to be conditioned to do the job for another year. Copper spray materials may be as plentiful

(Continued on page 19)

# STATE NEWS

**OHIO**—More than five hundred growers and 21 commercial exhibitors attended the Ohio State Horticultural Annual Meeting, held January 26-27 at the Hotel Carter, Cleveland.



SHELDON FUNK

Sheldon W. Funk, Boyertown, Penn., gave two talks: one on peach growing and marketing; the other on increasing profits from the apple orchard.

Carl Wooster, Food Distribution Administration, Washington, D.C., outlined experiences with the federal control program during the past year, and urged growers to organize by commodities to represent their interests in developing satisfactory price controls and to set aside orders during the remainder of the war emergency.

John Chandler, Secretary of the National Apple Institute outlined many ways in which his organization is working to improve incomes for apple growers and demand for their products. The N.A.I. represented growers' problems so effectively that apple price ceilings during the past year were increased, roughly, one cent a pound.

The 1944 Yearbook of the Society now is being printed. It will carry the complete proceedings for the meeting and will be mailed to members. Annual membership is \$3, payable to the Secretary, Ohio State University, Columbus.—F. H. BEACH, Sec'y, Columbus.

**RHODE ISLAND**—The Rhode Island Fruit Growers Association Annual Meeting, to be held on the evening of March 1 at Greenville Grange Hall, will be preceded by a supper, prepared under the direction of President John Barden.

At a recent meeting this State's fruit growers discussed labor saving practices and post-war plans. Brush pushers, spray towers and water tanks were suggested as means of saving labor. Among the topics discussed were a clean up of abandoned orchards, standardizations of spray materials, and a pool to purchase and resell to farmers equipment, now used by the armed forces, such as jeeps, bulldozers, etc.—E. P. CHRISTOPHER, Extension Horticulturist, Kingston.

**VIRGINIA**—Bud prospects for both apples and peaches are very promising in this State where reasonably good winter weather has been prevalent. The main complaint of growers is a shortage of moisture. The deep ground moisture is very deficient.

Messrs. Wm. F. Young, Staunton, and Henry Miller, Paw Paw, W. Va., with their wives, recently returned from a visit to the Northwest. Both these prominent fruit growers are members of the National Planning Committee. During their tour they attended the National Planning Committee Meeting and the Fruit and Vegetables Meeting which were held in Chicago.—W. S. CAMPFIELD, Sec'y, Staunton.

**WISCONSIN**—Organization of the Wisconsin Apple Institute continues to receive considerable response. Forty-seven growers have paid their membership dues, and plans are being made to carry on a program for promoting in-

terest and use of Wisconsin Apples, and to take care of problems which may confront this State's growers.

The use of Elgetol as a ground spray to aid in apple scab control is gaining interest. A fair number of growers used Elgetol last year with success. In this State, where apple scab is a serious problem, a reduction in the number of over-wintering spores by the use of this ground spray has proven very beneficial.—H. J. RAHMLow, Sec'y, Madison.

**MARYLAND**—Growers in this State are interested in the Redskin peach, originated at the Maryland Experiment Station. Trees are not available and propagating wood is limited. This peach ripens just before and during the Elberta season.



DR. W. S. HOUGH

At a recent meeting of the Maryland Horticultural Society, Dr. I. C. Haut analyzed our National apple varieties. He pointed out a glutted condition, regarding soft varieties of apples that must be marketed immediately after harvest or in fall and early winter. Grimes, Jonathan, Delicious, McIntosh, Golden Delicious, and Cortland are fighting for the same market. Maryland is favorably situated with heaviest plantings of stable and popular market varieties which adjust themselves downward to market requirements.

Dr. W. S. Hough, Virginia, told Maryland growers that codling moth becomes tough in sprayed orchards so are harder to control. New chemicals may be found for better control, but insects do not stay down, so constant hard work is necessary for any permanent control.—A. F. VIERHELLER, Extension Horticulturist, College Park.

**UTAH**—At the annual convention of the Utah State Horticultural Society, President J. A. Howell was instructed to appoint a research committee to work with the Agricultural Experiment Station in setting up the new research program on the recently acquired 70-acre horticultural farm. He also is to appoint a marketing committee, consisting of the heads of various fruit organizations in the State, and other individuals, for the purpose of obtaining closer cooperation among all marketing agencies in Utah.

Although a smaller crop than last year's record production is anticipated this season, development of fruit buds is very good as the weather has been favorable throughout the winter.—A. STARK, Sec'y, Logan.

**NORTH DAKOTA**—The North Dakota Agricultural Extension Service has sponsored a statewide Home Fruit Program which now is underway. The plan recognizes that fruit gardens are not as easily established as vegetable gardens. Desirable sites, protection from rabbits, as well as farm tenancy, must be considered in establishing a fruit planting. A purpose of the program is to make fruit a definite part of the Victory Garden and Home Food Production Program.—HARRY A. GRAVES, Sec'y, Fargo.

**ILLINOIS**—During February temperatures below zero apparently ruined most of the peach buds although prospects for an apple crop in Western Illinois are good.

Growers are receiving their orders on spray material but they are not getting delivery on spray machines or packaging material. Nitrogen fertilizers, too, are difficult for the orchard men to obtain. These facts, together with the tight labor situation, cause considerable concern among growers throughout the State.—C. C. MAST, Sec'y, Quincy.

**IOWA**—A mild, open, and dry winter has prevailed in Iowa. Buds on many shrubs and trees swelled somewhat due to unseasonably warm weather in January and early February. On February 10 and 11 several inches of needed snow fell and temperatures dipped below zero.

Fruit trees, principally apples, are set well with fruit buds. No freezing injury is anticipated in the tree fruits at this time. However, some crown injury in strawberries has been observed. The bramble fruits have suffered some damage because of the dry open winter. Grapes appear to be in good condition.

The official estimate is that there were 455,000 victory gardens in Iowa last year covering around 70,000 acres, and that Victory gardeners canned 150,000,000 quarts of fruits and vegetables. An enlarged garden program is planned for 1944. Indications are that there is a greatly increased interest among gardeners in planting small fruits.—R. S. HERRICK, Sec'y, Des Moines.

**MINNESOTA**—The Annual Horticultural Short Course at University Farm, St. Paul, will be held this year on March 22-24 inclusive. The fruit program will be presented on March 23. One feature of this session will be a discussion of "Orchard Management for 1944," given by Mr. Frank Farnsworth, prominent orchardist from Ohio.

A copy of the complete program for the three-day session may be obtained by writing to the Director of Short Courses, University Farm, St. Paul.

An evening meeting of the Minnesota Fruit Growers Association will be conducted on March 23 at which time color films of new varieties of fruit will be shown.—J. D. WINTER, Sec'y, Mound.

**CONNECTICUT**—With few apples to pack and with good weather in December and January, fruit growers spent more time than usual in orchard pruning and in removing filler trees. Many growers have purchased used boxes for their 1944 apple crop. Up to the middle of February, there had been no peach fruit bud injury.

The fruit farm labor problem is still serious in this State.—H. A. ROLLINS, Extension Fruit Specialist, Storrs.

**SOUTH DAKOTA**—On the grounds of the State College at Brookings has been located the Hansen Arboretum which consists of 15 acres, planted to the originations of Dr. N. E. Hansen. Four specimens of each of his originations have been planted here. These consist of many varieties of each fruit that can be grown in South Dakota. These include apples, pears, plums, hardy apricots, strawberries, raspberries, gooseberries, grapes, etc.



DR. N. E. HANSEN

Dr. Hansen, now 78 years old, continues his breeding experiments. This Arboretum constitutes a lasting monument to his many achievements as a plant breeder.

(Continued on page 36)



## Take a Leaf from the Book of the Good Orchardist

- The Time:  
**DELAYED DORMANT**
- The Problem:  
**SCAB and APHIS**
- The Object:  
**LOW-COST CONTROL**

**FRUIT**



**BUDS**

### PROTECT NEW FOLIAGE

and the fruit it will later nourish against the devitalizing attacks of aphids, red bugs, bud moths and similar destructive insects. Use Black Leaf 40 in the early spring applications for economical control, — in one combined spray.

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Mission fig trees 50 to 60 years old are common in California and naturally are of large size. Compare height with man standing near base of tree.

## FACTS ABOUT FIGS

### THEIR CULTURE IN CALIFORNIA

By IRA J. CONDIT

University of California, Riverside

**T**HE state of California produced in 1885 about 100,000 pounds of dried figs and in 1889 shipped the first full carload of this dried fruit to eastern markets. During the ensuing sixty years the production has increased to 32,800 tons dried, and 19,000 tons fresh fruit, from a bearing acreage of 34,826.

The canned-fig output in 1941 was 713,697 cases, each ton of fresh figs packing out from 55 to 60 cases, all of the Kadota variety. Eighty-six full car lots of fresh figs were shipped in 1941 from California by express and even by freight, mostly to New York.

The industry is based mainly upon

five varieties of figs named in order of their importance: Adriatic; Calimyrna; Mission; Kadota; and Black San Pedro. All are of Old World origin. About 20 years ago a prominent fig grower made the following terse statement of the fig variety situation: "Nothing is so delicious as the Calimyrna; nothing so remunerative as the Adriatic; nothing so certain as the Mission."

This statement still is true. The Adriatic tree is a vigorous grower and a heavy producer, but the figs are adapted neither to fresh fruit shipping nor to canning, and the dried product is inferior to that of the Calimyrna. From the growers' stand-

point, the Adriatic is a good variety and some Calimyrna orchards are being top-worked to this fig which produces without caprification.

The Calimyrna, or California Smyrna, is identical with the Lob Injir fig of Asia Minor. As a fresh fruit for local or distant markets it has few equals, and as a dried fruit it serves as a standard of quality. However, it is susceptible to fruit troubles, such as splitting, souring, and diseases carried into the fruit by the pollinating insect, so that the percentage of culls is sometimes rather high.

This is emphasized in the following statement of the 1941 fig crop: Calimyrnas showed considerably more substandards in 1941 than in 1940 because weather conditions so affected the crop that more than half of that variety, when dried, went into the non-merchantable grade. Specifically, out of a total Calimyrna tonnage of 9,075, the substandard diversion portion was 4,650 tons. Of the Adriatic tonnage of 12,150, only 2,000 tons were substandard. Calimyrna figs make up the bulk of the fancy packs which appear in city markets.

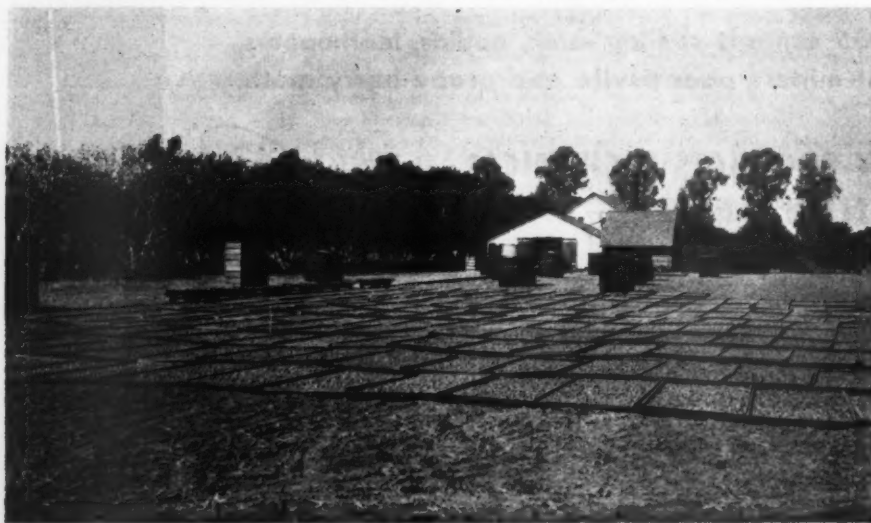
Mission figs are black in color, but this does not detract from their value as a fresh fruit either in local or distant markets. Large Mission figs of the first crop are almost ideal for fresh shipment, while the smaller figs of the main crop dry into an excellent product. Although the black color can be somewhat bleached out by various agents, Mission dried figs have not had as wide outlets or brought as good returns as straw-colored figs of other varieties. One objective in fig breeding is to develop a green or yellow fig which has the good qualities of the Mission, small closed eye, excellent flavor, and resistance to fruit spoilage.

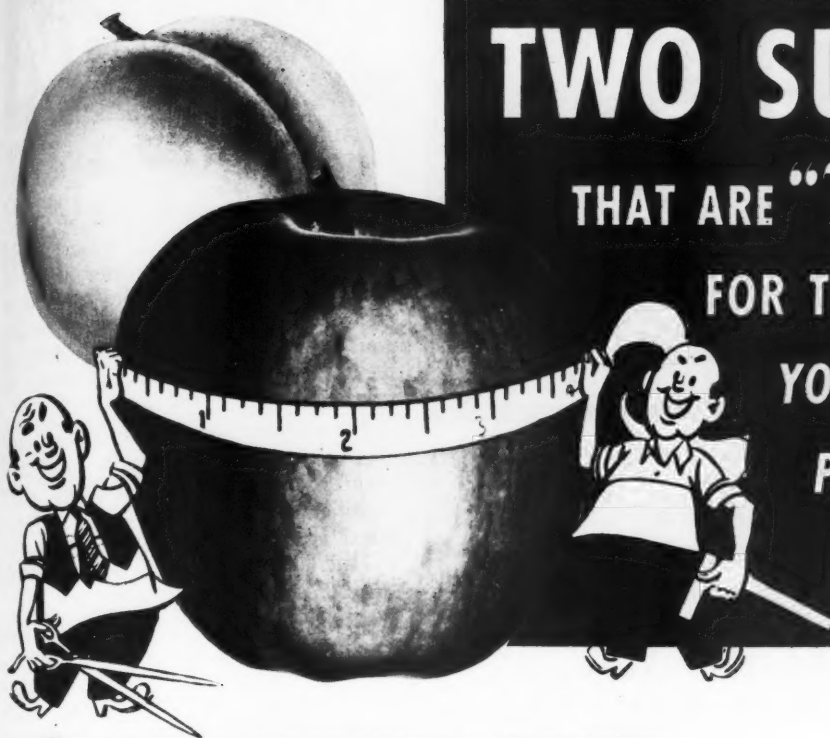
The Kadota is identical with Dottato, the chief drying fig of southern Italy. Introduced into California long years ago under various names, the Kadota was grown in a small way only until about 1921 when canning of figs on a large scale was begun. The characteristics which make the Kadota especially suitable for canning are: vigor and productiveness of tree, long season of ripening, medium size of fruit, rubbery texture of the skin, clear yellow color and approximate seedlessness. If the Kadota had a more decided natural flavor, it would make a still better product, both fresh and canned.

The Black San. Pedro or Brown Turkey is a good example of confused nomenclature in fruits, for there are at least three figs to which

(Continued on page 26)

Figs which drop naturally from the trees are picked up and dried in trays in the sun.





# TWO SULFURS...

THAT ARE "Tailor-Made"

FOR TWO BIG JOBS IN  
YOUR APPLE AND  
PEACH SPRAY  
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**1 APPLE DRITOMIC\* SULFUR** for apple scab. A sulfur spray material made exclusively for apples. Its Sodium Thiosulfate feature gives it an "extra wallop" ... *steps up apple control!* Spreads and covers exceptionally well and is economical due to low dosage requirements. (In addition to scab Apple Dritomic Sulfur also controls frog eye and mildew.)

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Aphis, Bud Moth, Red Bug and Pear  
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For Peach Brown Rot and Peach Scab  
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Page 14



# APS

A PAGE CONDUCTED IN THE  
INTERESTS OF THE AMERICAN  
POMOLOGICAL SOCIETY

## POST-WAR PLANS

**A**T THE St. Louis convention, plans were laid to seek the more general and active cooperation of many organizations and concerns who are vitally interested in the fruit industry of the United States. The principle is now well established that an over-all national organization, such as the American Pomological Society, can be, and has been many times in the past, of great assistance in securing a satisfactory solution of problems which affect the fruit industry. The APS from its beginning has fostered and encouraged the setting up and development of new organizations which since have proved to be of inestimable value. At St. Louis, President T. J. Talbert pointed out that "some of these are the American Society for Horticultural Science, International Apple Association, National Apple Institute, and the National Victory Garden Institute. All will admit that these organizations are sound and worthy."

The post-war period will be here sooner or later. Many problems are certain to arise which will affect the fruit industry. The APS is looking ahead to possible service when and if it is called upon by government officials to participate in conferences. As has been pointed out recently, the fruit industry will or should be greatly interested in the new trade treaties which will have to be written following the war.

Mr. Fred Motz in the February issue of the *AMERICAN FRUIT GROWER* and at the St. Louis meeting made a strong plea as to the urgency and need for an agreed-upon plan that the fruit industry should be prepared to present to government officials when new trade treaties are written. This agreed-upon plan cannot be

prepared unless some overall organization takes the lead in calling together representatives of all segments of the fruit industry.

Exports of fruits from this country following the war are expected to be an important factor in keeping the fruit industry in a vigorous, healthy, economic condition. Mr. Motz stressed the fact that the European peoples are, because of long frustration, starved for fruits, but that following the war the amount of fruit which these peoples may purchase will be regulated by the amount of credits which their governments will permit to be used for the purchase of foreign fruits. The fruit industry of the United States then should be prepared to see to it that this country secures a fair share of the export business in fruits.

This post-war situation is believed to be worthy of much careful thought and planning. To the end that the fruit industry be informed as to this matter, the officers of the APS have presented the position of the APS to the various state horticultural societies, to the members of the Allied Industries group, and to others, and are seeking their cooperation to the extent of subscribing for affiliated memberships. A number of state societies and allied industries already have done this. The Society has members in nearly every state and a number of the strongest state horticultural societies for many years have taken affiliated memberships because they realize such cooperation is extremely useful when a national organization tackles a problem.

*H. L. Lantz*  
SECRETARY

## FERTILIZING BLACK RASPBERRIES

**F**OR several years there has been an increasing interest in growing black raspberries in certain sections of western New York. The rich flavor of this fruit is making it increasingly popular as a dessert fruit, as a source of juice, either alone or blended with other fruit juices, and as a flavor for various types of frozen confections. This increasing demand has also resulted in better prices to growers.

Fertilizing young, vigorous, uniform Cumberland black raspberry plants with chemical nitrogen gave significantly higher yields of larger-sized fruit in experiments conducted by the Geneva, New York, Agricultural Experiment Station.

The three carriers of chemical nitrogen used in the tests, "Uramon" fertilizer compound, nitrate of soda, and sulfate of ammonia, were equally effective when they were used in quantities that supplied equal amounts of nitrogen.

Because 100 pounds of "Uramon" carries 42 pounds of nitrogen, only 115 pounds of that material were used per acre, while 300 pounds of nitrate of soda and 240 pounds of sulfate of ammonia were required per acre to equalize the nitrogen applications.

Soybean meal, an organic source of nitrogen, applied at the rate of 700 pounds per acre, gave a significant yield increase over no treatment. But it was a poorer source of nitrogen than the other three.

R. C. Collison and G. L. Slate of the Geneva Station report that, while every one of the treatments gave highly significant increases in yields over untreated areas, nitrogen was the effective factor; the presence in the fertilizer of phosphorus or potassium or both giving no significant differences.

"The yield of raspberries depends quite obviously not only on the amount of fruit per cane, but also on the number of fruiting canes," they add. "Here fertilizers had a significant effect on the number of canes to the plot or to the plant.

"There were no significant differences among the treatments, even soybean meal being as effective as the other nitrogen carriers. Obviously, it was nitrogen again which was the factor in producing more canes. Although there was a consistent trend toward larger canes on plants receiving nitrogen, the differences were not significant."



# NUT GROWERS NEWS

## POLLINATION OF THE PERSIAN WALNUT

INQUIRIES are frequently received by the writer as to the pollination requirements of the Persian (English) walnut. The United States Department of Agriculture in 1934 published a report on the pollination and blooming habits of the Persian walnut in California, but, as the California varieties are not grown in the East and climatic conditions are different, only the principles will be useful to the Eastern walnut planter.

It was found that all of the walnut varieties tested were self-fertile and interfertile and capable of setting satisfactory crops of nuts either with their own pollen or with that of other varieties, if the pollen were available when the stigmas were receptive.

With walnuts the male and female flowers are produced separately on the same plant and the pollen is distributed by the wind. It was shown in the California work that all of the 17 varieties studied were more-or-less dichogamous, that is, the male and female flowers bloomed at different times. In some cases the pollen was shed before the pistils were receptive, in others the pistils matured and dropped off before the pollen of the same variety was ready. Obviously, self-pollination is possible only when the pollen and pistils were ready at the same time. There was some overlapping of the blooming periods of the male and female flowers, but often not enough to pollinate the flowers needed to produce a full crop of nuts. In 13 out of the 17 varieties studied, there was practically no overlapping of bloom and self-pollination therefore could not take place.

Persian walnuts planted in the eastern states are mostly seedlings with only an occasional grafted tree. In many cases only a tree or two is set in the dooryard. Nothing is known as to the blooming habits of the trees as each one is different. About all that the planter can do to insure a crop is to plant several trees in the hope that they will differ sufficiently in their blooming habits to provide cross pollination for enough flowers to produce a crop of nuts.—George L. Slate, Sec'y, Northern Nut Growers' Assn., Geneva, N. Y.

# the best

## — WITH A WORLD AT WAR



Above: SAVOY COAT, SQUAM HAT



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SPRAYER SUPPLY MFG. CO., Grand Rapids, Mich



A strawberry bed showing good hedgerow development and mulch removed prior to picking season.

**STRAWBERRY PRODUCTION COSTS**

(Continued from page 6)

Some growers may reduce their production costs by more efficient cultural methods, but the operation should not be neglected. The use of straw mulch is important and helps insure uniform high yields of high quality fruit.

The cost of harvesting strawberries is almost directly proportional to yield. Most growers pay pickers by the quart. The prevailing price under present labor conditions is about 5 cents per quart. The costs of baskets, crates, grading, packing and hauling have been calculated on a per-quart basis and are included in table 2. The average cost of the entire harvesting operation and containers is about 9 cents per quart.

**Table 2: Harvesting Costs for Strawberries per Quart**

Picking	\$ .05
Baskets	.01
Crates @ 36c each	.015
Grading, packing, hauling	.015
	<b>\$ .090</b>

Profits from strawberries depend principally on three factors: (1) high yields per acre, (2) low or moderate production costs, (3) good market conditions. Since the price received for good berries is rather directly related to the consumer's ability to buy, there is little the average grower can do to improve this phase of the marketing situation.

High yields per acre and low production costs, however, should be the primary concern of all fruit producers. High yields of strawberries are encouraged by the following conditions: (1) a well-drained, fertile soil. (2) a frost-free site. (3) good cultural practices. The importance of these factors cannot be overemphasized. They should be given very careful consideration if a profit is to be

realized from the production of strawberries.

Table 3 indicates the importance of yield per acre in reducing the cost of producing strawberries. The expenses are based on tables 1 and 2.

**Table 3: Effect of Yield of Strawberries per Acre on Cost per Crate**

Yield per acre in quarts	Growing cost per quart	Harvesting cost per quart	Total cost per quart	Cost per 24 quart crate
2,000	\$ .166	\$.09	\$.256	\$6.14
3,000	.111	.09	.201	4.82
4,000	.081	.09	.173	4.15
5,000	.066	.09	.156	3.74

Good growers who commonly produce 3,000 to 4,000 quarts of strawberries per acre, and even 5,000 to 6,000 quarts in good seasons, should make adequate profits. Low yields of 1,500 to 2,000 quarts per acre of poor quality berries, which are all too common on poor soils, will show very low profits over actual expenses for labor and materials. The average yield of many states is between 1,000 and 1,500 quarts per acre.

The costs discussed in this article are averages based on records submitted by farmers producing strawberries in Ohio, and apply only to the present period of high prices. They are not intended to represent the more normal situation when prices in general are lower. Many growers may have lower, or possibly higher, wage rates and charges for materials, even during the present period of high prices. By altering the charges for the various items in Tables 1 and 2, each grower should be able to arrive at an approximate cost under his particular conditions.



## SPRAY FRONT IN '44

(Continued from page 11)

ful as in 1943, but no more than that can be expected for the coming season. Sulphur may be plentiful at its source but the problem of getting it to the fruit grower will not be made any easier by a shortage of metal containers and strictly limited transportation facilities. Furthermore, there will not be any government restrictions on the prevalence and severity of fruit diseases and insects. The American fruit grower will have to make every drop of spray count during the coming year, for the welfare of the national fruit crop will depend upon the most effective use of these spray drops. A review of the over-all spraying picture for the coming year would seem to be justifiable at this time before the war against fruit diseases and insects starts again this spring.

Fruit diseases and insects invariably occur as partners in crime, and their control can be achieved most economically by pooling the recommendations for their control in combination sprays wherever possible. Weather conditions, varieties, diseases, and insects differ so widely in the different fruit-growing districts that a national spray program for the various fruits is impractical. In every major fruit producing state, specialists in disease and insect control have tailored spray programs to meet the specific needs of the problems in that area. Many of these programs have recently been greatly improved on the basis of research and orchard observation and in this improved form should result in more effective and economical pest control. These schedules will be available in the spring and every grower should consider his past spray program and wherever necessary streamline his plans for the coming year to take advantage of these tested improvements. In many instances, fruit specialists can make a real contribution by formulating "prescription schedules" to take care of special problems of individual growers.

Although the idea of prescription spraying is not entirely new, it deserves emphasis. It has long been known that plant disease control measures, such as seed treatment and spraying, must be closely adapted to regional or local conditions. The important fact is that the prescription for spraying must be made precisely to fit regional or local conditions. It is only by taking into consideration such conditions that the best results will be obtained from spraying. Nat-

(Continued on page 23)



# SULPHUR

## IN THE SPRAY PROGRAM

The function of a sulphur in a spray program is to prevent the development and spread of fungus.

An important property of a sulphur fungicide is that it be processed to be harmonious to the full growth of foliage and fruit.

## KOPPERS FLOTATION SULPHUR

KOPPERS Flotation Sulphur is a precreamed paste that is inherently wettable. When sprayed, it sets quickly into an effective sulphur film on fruit and foliage. Subsequent rainfall redistributes the sulphur readily so that additional protection is given to new growth. The sulphur particles are extremely fine so that the protective coating penetrates between the dense hairs on foliage. Flotation Sulphur is non-caustic and kind to the trees.

## MICRO-FLOTOX

"MICRO-FLOTOX" contains micro-fine sulphur carefully blended with a balanced wetting agent. Fineness and perfect wetting give an effective film that redistributes during rainfall thus affording adequate protection when it is most needed. Controlled causticity makes "MICRO-FLOTOX" mild and allows fruit and foliage to develop normally.

The addition of ORTHOX Spreader Adhesive to either of these sulphur types is fully recommended in the pre-pink and pink sprays on apples. In later sprays, its use should depend on local conditions and recommendations.

**PASTE**

**POWDER**

*Sulphur* In either one or the other of these forms should be used to control apple scab, pear scab, peach scab and peach and cherry brown rot.

Ask your experiment station for recommendations, or consult an ORTHO fieldman in your area.



# CALIFORNIA

## Spray-Chemical

### CORPORATION

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## WORTH CLIPPING

# RODENT CONTROL IN ORCHARD AND STORAGE

## PART IV—RABBITS AND HARES

(Continued from February)

**H**ARES, under most conditions, readily enter box or wire traps because of their curiosity. Traps should be set in the orchard or nursery where rabbits feed, and near runways in adjacent swamps or other habitats where they live. In winter, these trails are like complicated highway systems, transecting areas in all directions. Apples, carrots, celery, cabbage or oats make good bait for snowshoes. Fall and winter are the best seasons to take hares in box traps. In trapping these animals, the traps should be visited at least once a day, preferably in early morning, and any animals caught should be dispatched. Steel traps should not be used as the animals may break their legs and escape.

Snares may be used lawfully in some states to catch cottontails and snowshoe hares, but the orchardist should be sure of their legality in his area. Where possible, snares should be set along main trails or at points where they lead under brush piles, logs or other obstructions. If an open trail is selected, it is well to place a barrier of sticks at each side. To make snaring effective, operations should be conducted on a large scale on a buffer belt around the area to be protected. This work should be done systematically and progressively. Snaring, however, is dangerous to harmless wild animals as well as to

domestic cats and dogs, because they very often follow rabbit or hare runs.

Other aggressive control measures such as ferreting and poisoning are not recommended. Ferreting is impracticable since rabbits do not habitually burrow; the use of ferrets also is forbidden by law in many states. This is true likewise with respect to the use of poisons when they are placed above the ground surface. Furthermore, poisoning has not been successful in the East.

Rabbits and hares taken by hunting, trapping, or snaring can be utilized for fur and meat, thereby partly offsetting the cost of control.

Since rabbits and hares are a valuable natural resource and protected in many states, the Fish and Wildlife Service has attempted through research to solve the possibility of crop protection by means other than the use of the above mentioned aggressive measures.

One device for protecting orchard and other trees from rabbits and hares is through the direct application of deterrents or repellents. There are, however, limitations in the use of most of these recommended, in that: (1) many are not sufficiently permanent to afford protection for an entire winter, and (2) most of those that are lasting are injurious to the trees.

The Fish and Wildlife Service has

found that the following repellents prevented the various species of rabbits, including the snowshoe hares, from seriously damaging fruit trees.

1. Heavy alkyos-type resin 4 pounds  
Ethylene dichloride 5 quarts
2. Asphalt emulsion (any good grade) 4 pounds  
Ethylene dichloride 5 quarts

To mix properly: Dissolve 1 and 2 separately before mixing. To this mixture, add the following ingredients, little by little, stirring constantly

- Copper carbonate (50 to 53 per cent) 5 pounds  
Lime-sulfur (powder) 5 pounds  
Ethylene dichloride 2 quarts

If the mixture is not smooth, let it stand for 1 or 2 days or until it is homogeneous on stirring. Before applying, it should be thoroughly agitated and then passed through a 16-mesh screen.

*This repellent should be applied only to dormant trees; it may cause injury when applied to growing trees. For best results, application should be made early in the fall, just after the leaves drop. Field tests show that 1 gallon of repellent will be sufficient to paint 150 to 200 two-year-old nursery trees, the exact number depending on the height of application and the size of the tree. One man can treat 35 to 50 four-year-old apple trees in one hour.*

The above repellent, especially prepared for cooperators by the Fish and Wildlife Service, may be obtained ready mixed at cost price through your County Agricultural Agent or the District Agent, Fish and Wildlife Service. Instructions for its use are furnished with the container.

Small orchard areas where rabbits are abundant may be protected by a woven wire rabbit-proof fence. A netting of No. 20 galvanized wire with

(Continued on page 37)

**A**S A PART of the fruit grower's battle to conserve food during this total war, it is highly important for him to reduce losses to orchards and stored fruit crops by curtailing damage done by several species of rodents. The accompanying article on "Rabbits and Hares" is the conclusion of the fourth of a series of five noteworthy articles on "Rodent Control in Orchards and Storage." This article has been prepared especially for AMERICAN FRUIT GROWER by Robert M. Borg, Assistant District Agent, Division of Predatory and Rodent Control, Fish and Wildlife Service, United States Department of the Interior. If after reading the accompanying article you desire further information, it is suggested that you write your County Agricultural Agent or the District Agent, Fish and Wildlife Service.—Editors.



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Page 11



# Safe-N-Lead

## Protects Foliage against Arsenical Burn



**THE SHERWIN-WILLIAMS Co.**  
101 Prospect Ave. • Cleveland, Ohio  
Insecticide Dept.

Write for Free folder on  
Safe-N-Lead and send  
name and address of  
your insecticide dealer.

# When you're BUSIEST



you appreciate  
the "Friend"  
**MOST!**

When a delay would be serious, the owner of a "Friend" is truly thankful that it's *the most dependable sprayer built.*

The "Friend" pump, which has only  $\frac{1}{2}$  to  $\frac{1}{3}$  as many moving parts as other high-pressure spray pumps, is naturally far more reliable.

**It's the easiest to keep in running Order.** No crankshafts or connecting rods—no wrist pins, no plunger cups. And there's no wear whatever on the "Friend" pump's cylinder walls.

**You never spray with a leaky pump,** as the "Friend's" packing is adjusted instantly, from the outside. And the valves lift out instantly for cleaning.

The "Friend" design is so much more practical, that thousands of growers say: "Of all the sprayers we have used, the 'Friend' gives **MOST SATISFACTION and LEAST TROUBLE.**"

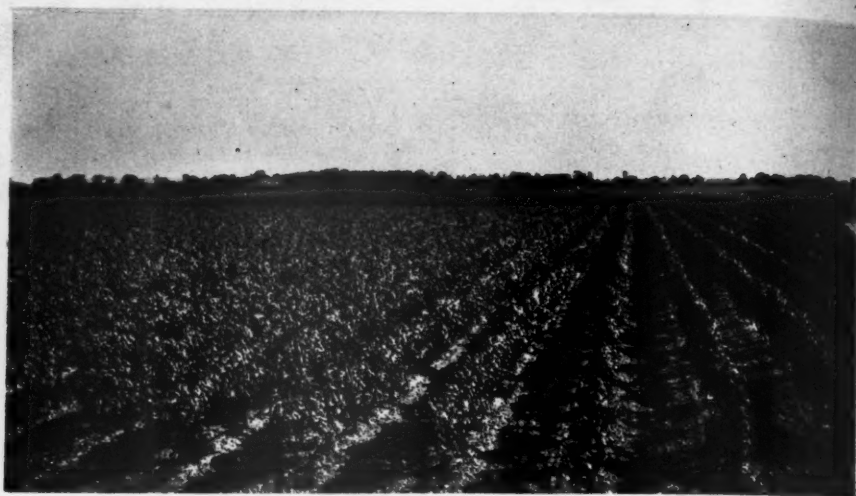
**Friend Manufacturing Co.,  
Gasport, N. Y.**

**Dusters** with the same reliability as "Friend" sprayers. **Sizers and Cleaners** for every need, from large commercial equipment to small growers' models.

**Easiest to Maintain  
in Working Order--**

*Fewest Moving Parts*

**"FRIEND"**



A vineyard of Catawba, Concord, Delaware, and Niagara in Sandusky-Lake Erie Islands district.

## GROWING OF AMERICAN GRAPES

(Continued from page 7)

quiet and it is low in acid. It has great promise for blending with Catawba wine and others of high acid in the production of fine champagne. Another new-comer with a similar use is a French-American hybrid known as Seibel 1000. This is a black grape that can be used for white wine.

Old established methods of pruning and training vines are still in effect but vary somewhat in different districts. Most Michigan vineyards are trained to the Four-Cane Kniffen system; Ohio vineyards to a modified Fan-Chautauqua Arm system, Pennsylvania to the Umbrella Kniffen, and New York to either Chautauqua Arm or Four-Cane Kniffen. The Catawba, regardless of where grown, is trained to a high renewal system more in keeping with its weaker growing habits.

The stronger growing varieties including Concord seem to produce equally well with any training system as long as the pruning maintains the proper number of buds in balance with the vigor of the vine. Pruning of Catawba, Delaware, and other weak growing sorts must be more severe and usually only half the number of buds will remain as would be left on Concord.

A very general fault of vineyard management is allowing the vines to become too old. Vines will bear abundant crops for a period of years then yields will decline. Soon a point is reached when it will be more profitable to tear out the old and replant with younger vines. A few crops will be lost until the new vineyard reaches bearing age but the increased yield will soon restore the loss. Growers with large acreage will find it more convenient to re-

move and replant a small portion of the acreage annually. The exact age to replace the vines will vary with soil types, methods of culture, and other environmental factors but the age that various varieties can more profitably be replaced is estimated as follows: Concord 20 years, Catawba 30 years, and Delaware 40 years.

Much has been learned recently about the nature and properties of soil and habits of vine growth. Many old-fashioned methods and opinions on soil management and cultivation are actually damaging and should be discarded. Much vineyard cultivation is too deep, cutting many roots. Disc harrows are safer to use in this respect than plows. Many vineyards are cultivated over too long a period. Most of the vine growth and berry development is made during the months of June and July and during this time cultivation will be particularly beneficial. Early in August the soil should be laid up for winter and the covercrop sown if one is used. Cultivation in the spring should not commence until after May 15th, the usual date of last killing frost.

The best choice for a summer covercrop is soybeans but buckwheat is used occasionally. Rye is the standard overwintering covercrop but has been troublesome some seasons when growth became too rank before cultivation and thus was injurious to vine development; therefore winter wheat would be preferred. Oats planted in August are a useful overwintering covercrop and have the advantage of not recommencing growth in the spring.

(Continued on page 34)



## SPRAY FRONT IN '44

(Continued from page 19)

urally, a prescription for the country as a whole cannot be given. The best that can be done is to urge that spraying measures be closely tailored to local requirements; nevertheless, certain facts with respect to improvement of materials and provisions in timing are generally applicable.

One of the most significant advances in fruit spraying in very recent years has been the improvements made in the spray chemicals used for fruit protection. The sulphur fungicides have been greatly improved by the introduction of materials of extremely fine and uniform particle size. The "wetttable sulphurs of the micronized type," and the "flotation sulphurs," by virtue of these properties, are infinitely superior to the older sulphur materials and show marked improvement in their fungicidal efficiency and their ability to withstand weathering. The wetttable sulphurs, in addition to being more effective as protectants against many fruit diseases, do not cause leaf and fruit burning and for this reason many growers are substituting them for the old lime-sulphur schedule, especially in late season cover sprays.

The use of the so-called "low soluble coppers" has largely replaced the standard Bordeaux mixture, for their use precludes in large part the dangers of burning which commonly accompanied the use of Bordeaux mixture on some types of fruit.

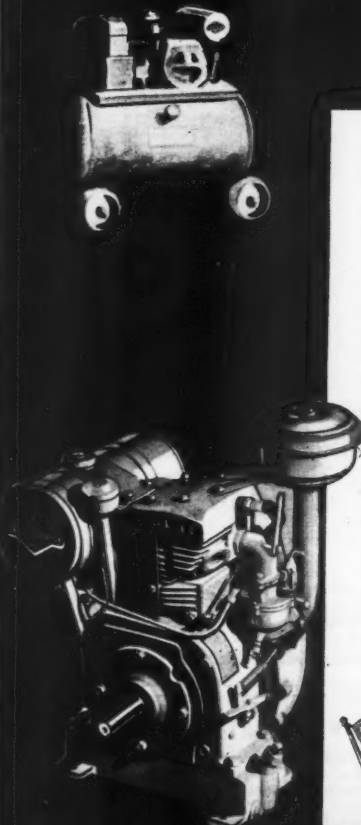
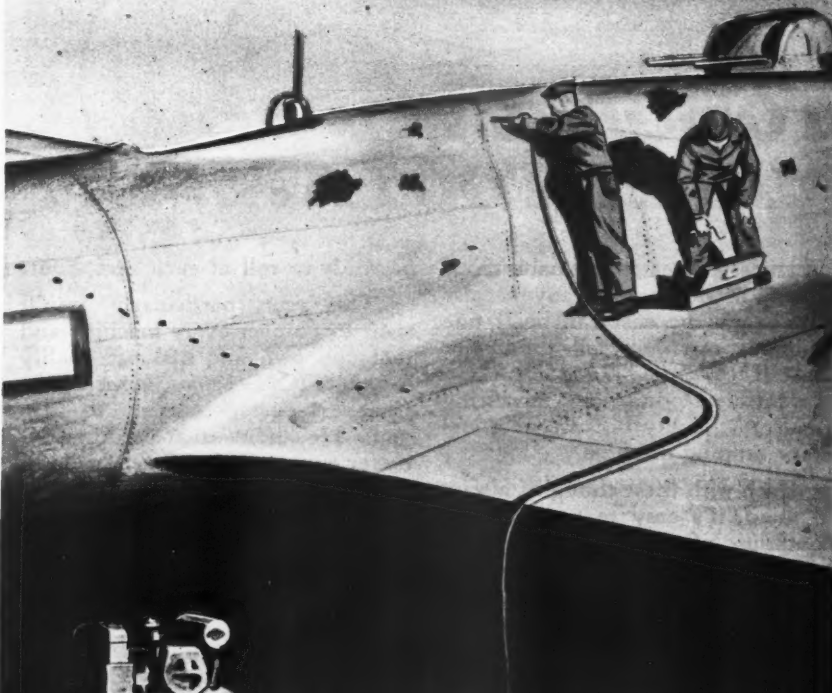
In recent years a new type of spray has been perfected—the eradicator spray. Eradicator sprays have the property of destroying fruit disease fungi before they can initiate disease in the spring. Of these materials, the water-soluble dinitro dormant spray has given excellent results when applied to fallen overwintered apple leaves in the spring, and should be considered as a proven and rapid method of cleaning up severe infestations of apple scab. Another spray of this type, monocalcium arsenite, has also given excellent results as a dormant spray for the control of brown rot blossom blight of stone fruits in preliminary experiments. Fungicide research workers in recent years have given special attention to the value of organic chemicals as orchard sprays. Proven and efficient chemicals are available to the fruit grower for 1944 and these should be used in place of the older and less effective fungicides and insecticides.

Effective spray chemicals alone will not adequately control diseases and insects of fruit crops unless they are

(Continued on page 28)

## WHEN REPAIR CREWS *Take Over*

They're doing a great job — those ground crews — repairing damaged planes and other fighting equipment at front line bases, and everywhere. For operating riveters and other repair and assembly equipment, air compressors are powered by sturdy, dependable air-cooled gasoline engines. One more front line duty for the hundreds of thousands of Briggs & Stratton engines now "In Service".



Just as Briggs & Stratton engines have been war-proved, so have our facilities for manufacture. The way those rugged, dependable engines have come through with flying colors is definite proof that Briggs & Stratton high standards of quality materials and precision manufacture could be, and are being maintained in face of wartime production schedules.

Our engineering and production staffs are geared up to help you on present war needs, or on your planning now for future production of gasoline powered equipment.

*"It's powered right — when it's powered by Briggs & Stratton."*

BRIGGS & STRATTON CORP.  
MILWAUKEE 1, WISCONSIN, U.S.A.

BACK THE ATTACK  
BUY WAR BONDS





## TOMORROW MAY BE TOO LATE!

When pests threaten a valuable crop, you know better than anyone else how heavy the cost can be if one or more machines fail to answer the call for battle. Food is too important a weapon to risk sacrificing yield and quality because of a laid up or limping machine.

Even with these thoughts always in mind, it's easy to overlook the condition of some machines you haven't used recently. They're a year older now but they still must

be ready to roll at each zero hour.

This year, particularly, you'll want to go over every machine and tool you own and make it qualify for ACTION—now. Your Allis-Chalmers dealer is ready to help you. He knows what to do and is better equipped than ever to do it. An overhaul job, a tune-up, a simple replacement or a part repaired ahead of time may save the day—and save critical war material besides. So, be prepared—see your A-C dealer Now!



**CALLING  
ALL SCRAP**

Every part or machine that simply can't be repaired should go to the Victory Scrap Bank immediately!

**ALLIS-CHALMERS**  
TRACTOR DIVISION • MILWAUKEE • U.S.A.



Every A-C machine certified by your dealer as Ready to Roll is entitled to this Farm Commando emblem.

### Small-Fruit Culture

By James S. Shoemaker

Complete discussions of all phases of production and marketing of grapes, straw berries, bramble fruits, currants, gooseberries, blueberries, and cranberries feature this text and reference book. Written in an easily understandable style, the practical grower will find this volume both interesting and useful. 52 Illustrations, 434 Pages. Sent postpaid on receipt of \$3.50.

AMERICAN FRUIT GROWER  
1370 Ontario Street, Cleveland, Ohio

### PROPAGATION OF PLANTS

By M. G. Kains and L. M. McQuesten—New, fully illustrated volume covering propagation by seeds, layers, grafting and budding. Chapters included on nursery and greenhouse management, also 38-page section on fruit tree stocks. 556 pages of practical information for the commercial plant propagator, the teacher, the student, and the experimenter.

Sent postpaid on receipt of \$3.50

American Fruit Grower  
1370 Ontario St., Cleveland, Ohio

## ANSWERS TO INCOME TAX PROBLEMS OF FRUIT GROWERS

By FRANK E. TROBAUGH

THE income tax law has been changed by the Revenue Act of 1942 so that now the orchardist may "carry back" or "carry over" his losses and recoup his losses for two years preceding or succeeding the year he makes a profit. If the taxpayer had an operating loss of \$1,000 in 1942 and made \$2,000 net in 1943, he can take credit in 1943, under Item 17 of his return, for the \$1,000 loss he had in 1942, or for a loss in 1941. If he made \$2,000 in 1942 and lost \$1,000 in 1943, he can file an amended return for 1942, and file a claim for refund for the tax paid in 1942 on the \$1,000 profit he made then.

If a grower had an operating loss in 1941 of \$4,000, and an operating profit in 1942 of \$2,000, and an operating profit in 1943 of \$3,000, he would pay in 1943 on the \$1,000 for the reason that he lost \$4,000 in 1941 and made \$2,000 in 1942 and \$3,000 in 1943, or during the three years, he had made a total of \$5,000 and lost \$4,000 in the three years, and, therefore, he would have to pay on the \$1,000 in 1943.

If he made \$4,000 in 1941 and lost \$2,000 in 1942 and \$3,000 in 1943, he would have during those three years a loss of \$5,000 and a profit of \$4,000. Therefore, he can make an amended return for 1941 claiming credit for the losses of 1942 and 1943, and get a refund of the proportionate part of the tax paid in 1941. This amendment to the income tax law is quite advantageous to fruit growers.

Many growers fail to get proper credit on their income tax returns for their deductions, depreciation and expenses because they do not give sufficient attention to income tax problems. These problems are just as important as many others which confront the fruit grower.

Fruit growers should set up a system of bookkeeping, showing their actual investment in land, buildings, equipment, orchard, and all other items of capital assets, as well as keep accurate records of income and expenses. Each year they will be entitled to take, as a deduction from their incomes, a depreciation on the capital assets (except land which does not depreciate), based upon the estimated life or remaining number of years the buildings and equipment will be usable or productive.

(Continued on page 27)



## RECEIVE ARMY-NAVY "E" AWARD

FOR excellence in production and outstanding production achievement, the personnel of The Cleveland Tractor Company, Cleveland, Ohio, was awarded the Army-Navy "E."

Presentation of the "E" award was made by Lt.-Col. T. H. Eichoff and was received by Mr. L. H. Grutsch, Works Manager, and Mr. V. O'Neal, representing the employees.

The "E" pins were presented by Lt. Commander J. P. Sturgis, U. S. Naval Reserves, assisted by Sgt. Arthur E. Sizer, U. S. Army, a veteran of the African campaign who now is on sick leave.

The "E" pins were accepted by a group of five of the oldest employees of the Company, three representing labor and two representing office employees. Hon. Frank J. Lausche, Mayor of Cleveland, was Chairman and he introduced the speakers.

The award was conferred in recognition of the Company's development and production of specialized crawler tractors, built for the Air Corps, and our outstanding production of its standard product as well as for parts for tanks, Bofor anti-aircraft gun, and half-trac cars.



**LESLIE H. HUGHES**

LESLIE H. HUGHES recently was appointed Advertising Manager of The Cleveland Tractor Company. He was born on a farm in North Dakota, attended the University of Minnesota, and later was editor on various farm publications. Mr. Hughes brings considerable advertising ability to his new position, having been affiliated with several national concerns in advertising capacities.



## "Duck Shooting" in Italy



Out of the invasion of Sicily and Italy have come many striking examples of the value and versatility of GMC Truck & Coach Division's 2½ ton Amphibian Truck. General Montgomery and his staff are reported to have ridden into Sicily in a "Duck." Both the British Eighth Army and American Fifth Army used them by the hundreds to establish beachheads and supply their forces on the Italian mainland. A hundred Axis soldiers are said to have surrendered without a struggle when one of these monsters emerged from the surf with machine gun blazing. As the illustration above shows, the "Duck" is now equipped to do some shooting on its own behalf. Armed with a swivel-mounted, 50-caliber machine gun, it can help fight attacks from any direction. Watch the news stories from the many fighting fronts and you'll notice that the "Duck" is out in front in most amphibious operations.

LET'S ALL BACK THE ATTACK

BUY MORE WAR BONDS

## GMC TRUCK & COACH DIVISION GENERAL MOTORS

Home of Commercial GMC Trucks and GM Coaches . . .  
Volume Producer of GMC Army Trucks and Amphibian "Ducks"



### MAGNETIC Natural CRYOLITE

Here's a natural insecticide that controls over twenty-five pests on fifteen different fruits and vegetables. It is safe, economical and has qualities superior to many commonly used insecticides. May be used as a dust or spray.

Yes, whether it's apples or peaches Stauffer gives you maximum protection against scab and brown rot at minimum cost. That is why growers everywhere insist on Stauffer Sulphurs.

American fruit growers who harvest the most Extra Fancy's next fall will reap the "extra profits." The income from your orchard is not determined by the quantity of fruit you grow, but rather, by how many will be Grade A's to demand a premium. Keep down the size of your cull heap by using Stauffer Sulphurs; your dealer can supply you with a specific grade to meet your requirements.

**STAUFFER CHEMICAL COMPANY**  
420 Lexington Avenue, New York 17, New York  
444 Lake Shore Drive, Chicago 11, Illinois  
624 California Street, San Francisco 8, California

# STAUFFER

## Protect peaches with Tennessee Triple Dust Tennessee Triple Spray

This year's peach crop is War Production! Protect your crop with Tennessee products!



Write For Free Bulletins

ASK  
YOUR  
DEALER

**TENNESSEE CORPORATION**  
Atlanta, Georgia Lockland, Ohio



### BORAX—BORIC ACID

Borax or Boric Acid—for the effective control of BORON DEFICIENCY DISORDERS in apple orchards.

WRITE US FOR PRICES  
AND INFORMATION

**PACIFIC COAST BORAX CO.**

51 Madison Ave., New York City

**SPRAYERS!** Here  
is the Only Way to Maintain  
CLEAR VISION . . .

### E-Z "C"

Face Protector with  
Renewable Tear-Off Visor!

\* Don't let lime, lead and sulphur spray interfere with better crop coverage. Just pull out and tear off a strip of transparent ribbon for continuous CLEAR VISION. Order from your seedsman or hardware dealer—or write direct. \$3 complete.

**CHICAGO EYE SHIELD CO.,** 2307 Warren Boulevard  
Chicago Illinois



### GRAFTWAX TREE HEALANT

excels in grafting and budding; cures tree and plant wounds, blights, and other diseases and for cavities. Repels rodents, ants and other pests. Adhesive, waterproof. IT SEALS AND HEALS. SWEET ON COLD. 1 lb., 70c—2 lbs., \$1.20—6 lbs., \$3.25—12 lbs., \$6.00 postpaid. Free sample.

**CLARION DEVELOPMENT CO.,** Dept. A, Clarion, Pa.

## FACTS ABOUT FIGS

(Continued from page 14)

the latter name is applied. California Brown Turkey is identical with Negro Largo of England which again is the same at San Piero of Italy. The Brown Turkey fig of England is different from the above as is also the Brown Turkey commonly grown in the southeastern United States. This variety is of minor importance in California, being largely grown only in the southern part of the state and marketed fresh.

The relative importance of the two leading varieties is emphasized by the fact that in 1932 the Adriatic produced 58 per cent of the total dried fig crop of California, while in 1941 it was only 36.5 per cent of the total. On the other hand, the percentage of Calimyrna production rose from 16.2 to 27.5 in the same period. The bearing acreage of Calimyrna trees in 1941 was 14,074, while that of Adriatic was only 8,863, indicating a much greater production per acre for the latter variety.

United States imports of dried figs have dwindled from a high of 20,300 tons in 1925 to only 700 tons in 1940. From 45 to 75 per cent of imported figs formerly came from Turkey with Greece second and Italy third in order of imports. The cessation of imports naturally has resulted in an increase of domestic farm and packer prices, just as it has with olive oil, almonds, and certain other commodities. Comparable packers' quotations of dried figs in 1922, also a year of high prices, and in 1943 are as follows: Choice Calimyrna 14.8 cents and 17.3 cents; choice Adriatic 9.1 and 13.5 cents; choice Mission 13.3 and 8.0 cents per pound f.o.b. California.

Cooperative marketing of dried figs started in 1918 with the organization of the California Fig Growers Association which a few years later became the California Peach and Fig Growers, handling both dried peaches and figs. This was liquidated in 1933 and for a short period the Prune Association tried to market figs.

On February 5, 1935, fig growers met at Fresno and organized the California Fig Institute. This Institute is dedicated to the general improvement of the fig industry but does not engage in the marketing of figs or fig products. Its early activities were devoted to grower educational work and to the promotion of research on fig spoilage diseases. The research work has been conducted by the University of California over a period of

(Continued on page 28)



## ANSWERS TO INCOME TAX PROBLEMS

(Continued from page 24)

For example, on a frame building with an estimated life of  $33\frac{1}{3}$  years, an annual depreciation of three per cent could be taken; on tractors with an estimated life of 10 years, 10 per cent of the cost; horses, mules and cows, 10 per cent; automobiles and trucks, 20 per cent; spray rigs and dusters, if their estimated life is 15 years,  $6\frac{2}{3}$  per cent annually. A peach orchard with an average life of 20 years would be five per cent and an apple orchard with an average life of 40 years,  $2\frac{1}{2}$  per cent.

Concerning the loss a farmer can deduct from his income tax if his orchard, or part of it, is destroyed by fire, by tree dying, etc., he can take his loss on that the same as if a building or piece of machinery were destroyed. If a building, peach or apple orchard originally cost \$2,000 and was destroyed at the end of the tenth year, and the owner had deducted three per cent each year for the building, or five per cent for the peach orchard, or  $2\frac{1}{2}$  per cent for the apple orchard, he then would be entitled to deduct for the loss out of his income for the tenth year—\$1,000 for the destruction of the building, \$700 for the peach orchard, or \$1,500 for the apple orchard—if there were a total loss; otherwise, such proportionate part as was destroyed. If he rebuilt the building, or reset the trees, he then would have a new capital investment which he would annually depreciate as he did the first.

Each year the orchardist is entitled to deduct as expenses the cost of spraying, fertilizing and caring for the trees. These annual expenses, having been deductible each year, would not be again deductible at the time of the loss or destruction of the orchard by any unusual happening. If the orchardist neglected each year to deduct his cost of spraying, fertilizing, etc., that is unfortunate as he would not be entitled to that credit during the year the orchard would be destroyed by fire or other unusual event. He had this deduction by reason of fertilizing, etc., each year and, if he did not take it, he could not cumulate the expense and deduct it all at some future time as such expenses are only deductible the year they are incurred.

(Continued on page 29)



"Sure'd like to hear Lucy singing at the Friday Socials again!"

• He's fighting a war three thousand miles away. And yet the things he thinks about, the things he mentions in his letters, are the small familiar memories that speak of home.

"Remember the song Lucy sang that Friday night? Sure would like to hear her sing again . . . Do they still pitch horseshoes in the backyard? . . . Wait till I get home and take on Dad!"

Others may have a different picture of home. But you may be sure of one thing. Every memory is made up of small familiar pleasures. These are the things that they look forward to returning to . . . the things to keep intact—for them.

It happens that to many these small pleasures may include a glass of beer occasionally—as a beverage of moderation after a hard day's work—enjoyed with friends—or with a home-cooked meal.

A glass of beer—not of crucial importance, surely . . . yet it is little things like this that help mean home to all of us, that do so much to build morale—ours and his.



Morale is a lot of little things

# Do better disking

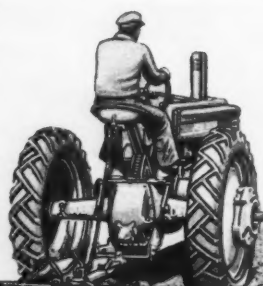
IN STUBBORN HYBRID  
STALKS AND ROOTS ...



## JOHN DEERE Tractor-Controlled Disk Harrows



John Deere owners like the amount of work they can do in a day with these modern tractor disk harrows. But best of all they like the *quality* of work they get. Scene above shows John Deere "JB" double-action harrow. Scene below, shows Model "S" single-action. Both harrows are famous for strength, easy-handling, and low-operating cost. Both are built in sizes to match the power you have available.



Investigate  
now . . . see  
your John  
Deere dealer.



BUY MORE BONDS ★ GET IN THE SCRAP

## SPRAY FRONT IN '44

(Continued from page 23)

properly applied at the right time. Proper timing is undoubtedly the most difficult art in the practice of spraying. When materials were abundant, the "extra, cover spray just to make sure" could be applied as added protection. This will not be desirable, or perhaps even possible, in 1944, for the grower will have to make every drop of spray do its job. The fruit specialists employed by the state can make a real contribution in this connection. Past records made over a period of years in each fruit-growing area on weather conditions, fruit development, and disease and insect epidemiology have made it possible for plant pathologists and entomologists to predict with reasonable accuracy the timing of most fruit spray applications. Wherever possible, such a spray timing service should be developed and expanded and made avail-

able to the grower through the medium of the radio.

This, then, is the "Spray Front for 1944." The American fruit grower must produce an adequate fruit crop and he will have to do it under difficult circumstances. Careful advance season planning, improved spray schedules, in some cases "prescription" spray programs to meet special needs, and the use of new and improved spray chemicals will make it possible for the grower to overcome many of these difficulties. State aid in properly timing the various sprays will help to make every drop of spray count in 1944.

Improvements which must be made now to meet the changed conditions perhaps will contribute in no small degree to the more economical production of high-grade commercial fruit in the coming year.

AMERICAN FRUIT GROWER, MARCH, 1944, Page 28

## FACTS ABOUT FIGS

(Continued from page 26)

years with the aid of Institute funds raised by an assessment of \$1.00 per ton on dried figs delivered to packers.

In 1936 the Institute sponsored an organization of the Pacific Dried Fruit Products Association for the purpose of purchasing with Federal funds substandard figs which were to be diverted into by-products such as animal feed, commercial alcohol, brandy, and sirup. Such substandard figs previously had exerted a price-depressing influence because of their use in fig paste. After one year of operation the Institute sponsored the establishment, under the California Agricultural Prorate Act, of Fig Production Zone No. 1, covering eighteen commercial fig-producing counties in the interior valleys. Under the marketing program adopted there was established a standard of quality of 65 per cent passable for all figs delivered by growers to packers and for the diversion of all substandard figs into by-product channels. Since 1938, the standard of passable figs has been 70 per cent.

The following paragraph is quoted from the report of the Director of the Fig Institute, March 1942: "The value of Dried Fig Marketing program to the entire industry is demonstrated by the fact that whereas the average total farm value of the dried fig crop for the period 1931 to 1935 inclusive was only \$888,900, the six-year average for the years 1936 to 1941 inclusive was \$2,258,333. Even eliminating the 1941 season which was helped materially by a general rise in commodity prices, higher purchasing power, and the elimination of import competition, the previous five-year average total farm value was about \$2,000,000. The low point for the industry was reached in 1932 when it was estimated that the crop was worth only \$484,000.

"The total farm value for 1941 is officially estimated at \$3,739,000, an all-time high. However, it should be pointed out here that there was a sharp rise in production costs both because of increased wages and of quality conditions that made sorting difficult and costly, particularly in the case of Calimyrnas and Adriatics."

### • NEW BOOKLET •

A COMPLETE line of water systems and pumps for the farm and home are found in a new booklet, recently issued by The F. E. Myers & Bro. Co., Ashland, Ohio. Readers may obtain this booklet, free of charge, by writing to this Company and referring to "Booklet No. MS44."



## ANSWERS TO INCOME TAX PROBLEMS

(Continued from page 27)

If the fruit grower had (by error) deducted on the year he set his orchard the full cost of the trees and full cost of the labor, he would not be entitled to take any annual deduction for depreciation on the orchard or any deduction by reason of a fire or other loss of the orchard at the time it was destroyed, for he already would have deducted the cost of the orchard as an expense at the time he set it. It is not proper that the cost of setting the orchard be deducted the year it is set, as that is a capital investment and should be carried on the books at its cost and depreciated each year. The annual expense of caring for the orchard is deductible each year.

If a tree, or trees, had to be pulled, then the grower would be entitled to deduct the undepreciated value of such trees this year, if he had been annually depreciating the orchard. There is some question that, if he had not been annually depreciating the orchard, he could take a greater loss deduction than he could be entitled to if he had been taking depreciation. It behooves the grower to take full credit each year for all allowable depreciation on his capital assets.

In the event the trees were being depreciated over a 40-year period, and the grower had heretofore depreciated it ten years, he this year could deduct the remaining book value of the trees (30 years allowable depreciation) by reason of the loss he sustained this year. Or, if each tree in the block was damaged 50 per cent and the owner had the trees on a depreciation schedule of 40 years (10 of which had been deducted heretofore and it was reasonably certain the trees would live 10 years more), he could depreciate the remaining investment in the trees over a period of 10 years instead of 30 years.

If the capital investment in this orchard were \$2,000, \$500 of which had been heretofore deducted, that would leave \$1,500 to be deducted

(Continued on page 32)

# EXTRA POWER FROM YOUR PRESENT TRACTOR



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plus good gasoline will  
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**Y**ou can have all the advantages of power, flexibility, and convenience of operation for which high compression tractors are noted. Have your dealer give your old low compression tractor a *Power Booster Overhaul* and use good gasoline instead of any heavier fuel.

Power Booster Overhauls are easy to make. When you get your next overhaul, just ask your dealer to replace the worn pistons with high altitude pistons (or install a high compression head in some models), put in "cold" type spark plugs, and make the recommended manifold change or adjustment.

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oil by reducing crankcase dilution.

Even though you may not be ready for an overhaul for some time, try to let your dealer know as far in advance as possible when you will want one, so he can schedule his work and order necessary parts. Clean up equipment before you take it in for service and make minor repairs yourself, when you can, so the mechanics will have more time for major work. Saving your dealer's time may save you money.

For further information about Power Booster Overhauls, write for the free booklet, "High Compression Overhaul and Service."



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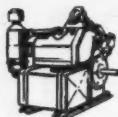
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Above is shown the planting of peach trees on master terrace ridge in Experimental Orchard.

## CONTOUR PLANTING

(Continued from page 9)

these lines. In fact, one can say that this method, with or without the use of cover crops, is the only sure way to prevent such losses. The height of the terraces and the depth and width of their attendant channels depend upon (1) the interval between terraces and (2) the heaviest rainfall likely to occur. Contour planting and the use of terraces lend themselves admirably to the growing of fruit whether the crop be borne on tree, bush or vine.

Contour planting was an old practice before large scale fruit growing developed, in the Southeast. Naturally a number of types of terraces were developed, ranging from the narrow "ditch" and "bank" type to the broad "Mangum" type. The ditch and bank terrace has a narrow channel of low capacity with the bank also low and narrow. The bank is often planted with a row of corn but in many cases weeds are permitted to occupy it. The Mangum terrace, on the other hand, is sufficiently broad to be planted with any agronomic crop and any animal or tractor-drawn implement or machine may be used on it. For fruit crops the "Nichols" terrace is now considered most suitable. This type of terrace was developed by Dr. M. L. Nichols, formerly of the Alabama Experiment Station and now Chief of Research in the Soil Conservation Service.

The Nichols terrace is built by moving all the soil downhill and, of course, can be built to whatever height necessary. Between terraces, other

rows are laid out parallel to the terraces and small "ridges" are built by plowing four to six furrows together. If the interval between terraces allows more than two rows of peach trees, the upper row is laid off parallel to the upper terrace and the second row parallel to the lower terrace with the other rows parallel to one or both of these rows, depending upon the slope. If grapes are planted, there may be six to 10 rows between terraces and, if berries are grown, a still greater number of rows may be required.

The laying out of the contour lines, building the terraces, and plowing the ridges for the rows between terraces, does not end the fight to prevent soil erosion during the life of the planting. Each year the terraces will need some attention in keeping open the channels and in keeping the terrace ridges properly formed. Usually a single disc harrow is used to keep the channel open and sufficiently wide, and to maintain the terrace ridge at the proper height. If a single disc harrow is used for every cultivation, however, the terrace ridges could become too high and the channels too deep in a few years. If a double disc harrow is used for every cultivation, the ridges may become too low after several years. Consequently, by using single and double disc harrows, the height of the terraces and the depth and width of the channel can be kept in their proper proportion.

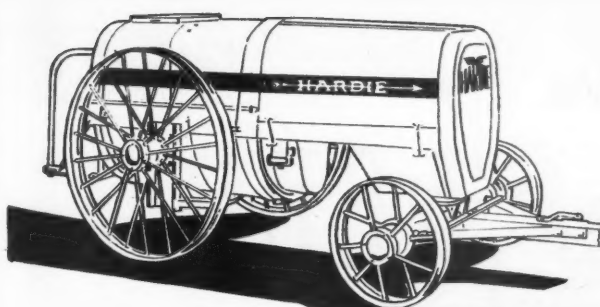


All tillage in a contour fruit planting must be done in one direction, for if tillage tools were dragged across the terraces, it would be only a short time until they would hold little water. Some hoeing is usually necessary to keep down tall-growing weeds in the row but by the use of extension harrows the amount of space which requires hoeing is greatly reduced. However, these two disadvantages of contour planting are greatly outweighed by the advantages. Consider what happens when an orchard is planted on a slope using the square or hexagonal system, and cultivation is done in several directions. In the Southeast within a comparatively few years each tree will be on an "island." Each year as the "island" becomes smaller, part of the root system becomes exposed, the more fertile topsoil with its organic matter disappears, the trees become stunted, and the crop of fruit becomes too small to be profitable. Then either the orchard must be terraced or abandoned.

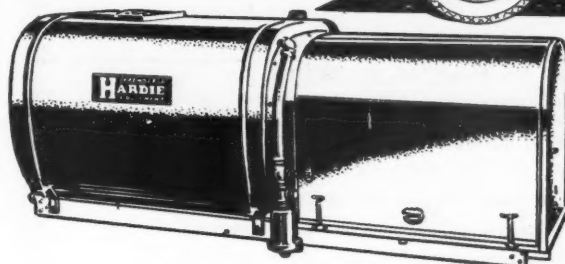
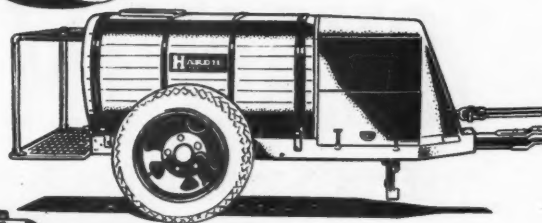
In several localities this is exactly what happened some years ago and a visit to such orchards was sufficient to convince fruit growers who have sloping lands that terracing pays. Today there are few fruit growers in the Piedmont Section of the Southeast who do not believe in terracing. A good estimate of the number of peach trees in South Carolina now is around five million or nearly 50,000 acres. Of this acreage approximately one-half is in Spartanburg County, while around one-fourth is growing in other Piedmont counties (where the land is gently to steeply rolling). Three-fourths of the acreage in peaches is on land that should be terraced and this acreage is terraced with but a very few exceptions. The best practice is to build the terraces before planting. They can be built after planting although to do this some trees will have to be removed and it will be more difficult to cultivate and spray such an orchard.

While proper terraces will prevent soil erosion by water, they are not supposed to hold all the water that falls in the orchard. During some high intensity rains or heavy rains of long duration some water must get out of the orchard but, if the fall of the channel is correct, usually not over a few inches per 100 feet, the excess water runs out slowly and carries little or no soil with it. If the fall of the channel is too great, excessive scouring of the channel results as well as the loss of too much soil. A corollary to terracing for tree fruits is the growing of cover crops, either legumes or non-legumes. Legumes should be preferred for their well-

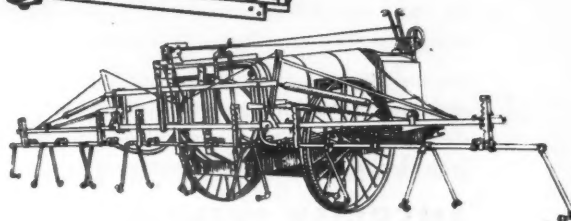
(Continued on page 36)



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The present scarcity of Granular 'Aero' Cyanamid for fertilizer use may be expected to continue for the duration due to its importance in the war effort.

But we are looking forward to the day, which we hope will be soon, when we will be able to furnish you regularly with your usual supply of Agriculture's Most Useful Form of Nitrogen—Granular 'Aero' Cyanamid, the same high concentration of nitrogen and lime which has given such excellent crop results.

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## ANSWERS TO INCOME TAX PROBLEMS

(Continued from page 29)

this year; if the trees were a total loss this year, or had been damaged so that they would live only 10 years longer instead of 30, he could deduct \$150 a year for the next 10 years instead of \$50 a year as originally scheduled. Any change in the rate of depreciation is subject to the approval of the Commissioner of Internal Revenue.

In the event the fruit grower has failed to set up his books correctly and heretofore to take his depreciation and other expenses annually, there is no reason why he cannot start now. He can set up his orchard and his buildings on his books at this time at the amount of his capital investment, estimate the remaining life thereof in years, and annually deduct in the future the remaining depreciation to which he is entitled, based on the life of the asset.

In view of the constantly increasing taxes and intricacies of the Revenue, as well as other laws, it is advisable that every grower set up a complete set of books which will adequately account for his income and expenses as well as show his depreciation accounts. It will prove to be a most necessary and profitable investment.

## NEW AGRICULTURAL CHEMICALS DIVISION

**T**HE Pennsylvania Salt Manufacturing Company of Philadelphia has established within its organization a new sales division to be known as the Agricultural Chemicals Division.

Leonard T. Beale, President, called attention to the fact that chemicals used in agriculture are rapidly growing in importance. He indicated that the Company's Research and Development Department has been engaged in the study of important new agricultural chemicals. He believes that these studies will result in the addition in the near future of new agricultural items.

It is the Company's purpose, Mr. Beale explained, to tie all of its agricultural chemicals, present and future, together in the new Division.



## COVER CROP VICTORY

(Continued from page 10)

a good many years ago for his father down in South Carolina.

This Agent realizing what was occurring and knowing Gardenhour was ready for most anything, recommended changes in his soil management to build up this soil that was inherently productive.

As a result, in less than five years, 164 acres of the 200 acres of trees were terraced, and another 20 acres were planted on the contour without the use of terraces. Though the Soil Conservation Service had come to Gardenhour's aid in building these terraces and the laying out on contour lines, he realized the maintenance job was his. He bought a small terracing machine of his own with which he keeps his terraces in good repair. He often finds it necessary to cultivate across the terrace to break up the sod. This tends to fill in the terrace. The small terracer soon works the terrace in shape again.

The use of cover crops came later through the Agent's recommendation, so that today there is almost no soil loss from the large tract of trees. The combination of good cover cropping and terraces has improved the soil and this grower is getting the maximum out of it and keeping a reserve for producing future crops.

According to A. F. Vierheller, Extension Horticulturist, University of Maryland, who also aided in the cover crop recommendations, it is important that growers select cover crops adapted to their particular orchard soils, and that these cover crops be seeded at the proper time, using sufficient fertilizer to promote good growth. In other words, a deep-rooted cover crop should not be seeded on a shallow soil, and no cover crop will do well on a poor soil. Also, a cover crop should be so planned that it will attain maximum growth before it is turned under.

Gardenhour is using for his cover crop a mixture of domestic Rye grass and vetch at the rate of 30-40 pounds per acre (15-20 pounds rye grass; 15-20 pounds hairy vetch). In seeding, he first discs thoroughly with his heavy orchard disc in August and sows his seed with a Cyclone seeder. This year he has increased his rate of seeding of vetch a little to endeavor to add nitrogen to the soil that he thought might be short.

He never plows down his cover crop. By discing the crop down, he points out, he is able to cut up the growth and leave it on the top of the ground where it will act as mulch to hold the soil moisture and reduce erosion possibilities.



*"Worth its weight in gold"*  
says **WALT WILSON**

Some folks take it for granted that foliage and bud devouring caterpillars, cutworms, bagworms and other larvae of tree-climbing insects won't damage their fruit — simply because they never have been bothered with these pests. *They don't band with TREE TANGLEFOOT.*

Others, like Walt Wilson, realizing that these crop destroying pests may strike anywhere and most unexpectedly take the simple and relatively inexpensive precaution of banding trees and vines with TREE TANGLEFOOT — the barrier that stops all climbers cold. And when infestations do occur, as they did last year in Walt Wilson's neighborhood, TREE TANGLEFOOT means all the difference between a crop and no crop. Then, as Walt Wilson says, "TREE TANGLEFOOT IS LITERALLY WORTH ITS WEIGHT IN GOLD".

Of all times, don't take a chance this year. Prices are bound to be high. Every ounce of America's fruit crop is vitally needed. Band NOW before the adult insects emerge and lay their eggs. Use only genuine TREE TANGLEFOOT enthusiastically endorsed by leading growers and entomologists everywhere. One banding lasts for months. For sale at hardware, seed and growers supply stores.

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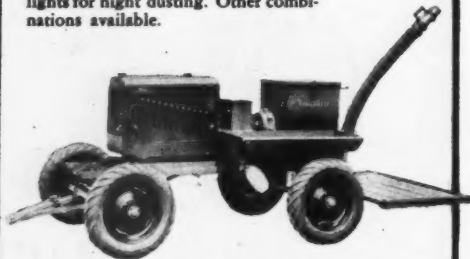
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1. Niagara Cyclone Fruit Duster... equipped with self-starter engine and lights for night dusting. Other combinations available.



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Use "Ammate," either as a spray in solution with water or in its dry form. Used at the proper rates and applied according to recommended procedure, "Ammate" will effect a permanent kill to many weeds.

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## AMERICAN GRAPES

(Continued from page 22)

Fertilizer tests by several experiment stations have established the value of barnyard manure in the vineyard but usually it is not sufficiently available. Annual applications of commercial nitrogenous fertilizers at the rate of 30 to 35 pounds of available nitrogen per acre will be profitable if vines are in a healthy receptive condition. Phosphorus and potassium are usually adequate in vineyard soils but they could be applied every three or four years.

The battle against insects and diseases utilizes modern machinery and chemicals and a thorough efficient campaign must be waged if the vineyardists are to be the victors. Black Rot, Downy Mildew, the Grape Berry Worm, Leaf Hoppers, and other insects and diseases can usually be controlled by a program of three sprays; the first a prebloom about seven to 10 days before blossom, the second about three days after bloom when the flower parts have fallen and the small berries are apparent, and the third a repeat application seven to 10 days after the second. Later sprays may be warranted if berry worms have been severe or Black Rot threatens. The materials and amounts to be used are here listed:

Lime	7 pounds
Blue Vitriol	4 pounds
Lead arsenate	3 pounds
Rosin Fish Oil Soap	2 pounds
and Kerosene	1/3 pint
or	
Summer Oil	3 quarts
Nicotine sulphate	1 pint
Water	100 gallons

Nicotine sulphate is included in both after bloom sprays but not in the prebloom. The one-third pint of kerosene is added as a defoaming agent only when Rosin Fish Oil Soap is used. The Bordeaux strength is reduced to 2-8-100 when Ives and other tender foliaged varieties are sprayed, other materials remain the same.

## WORDS OF WISDOM

by Sheldon Funk

There is a greater difference in peach strains than in many varieties themselves. Pruning and spraying go hand in hand. I would not be in the apple business today if I did not have a cold storage on my farm.

We have never been able to supply the demand for apple juice.

Don't follow my fertilizer formula but develop a good one of your own.

My duster is the most satisfactory method of applying granular fertilizer in my orchard.



## VEGETABLE OR FRUIT?

By J. H. GOURLEY

INTEREST never seems to wane in the popular question: "What is a fruit and what is a vegetable?" There are lawsuits over the matter. People are fined for selling "vegetables" on Sunday when they claimed they were selling fruits. Radio quizmasters lash out at those who miss the question, and so the matter will not down.

The dictionary cites courts as holding "that all those (products) which, like potatoes, cabbage, carrots, peas, celery, lettuce, tomatoes, etc., are eaten (whether cooked or raw) during the principal part of a meal are to be regarded as vegetables, while those used only for dessert are fruits." Then an apple eaten during meal would be a vegetable, but one eaten for dessert would be a fruit!

It is not a great stretch from the word "vegetative" to "vegetable," which denotes rather closely the real meaning. Bailey gives a usable definition when he says that a vegetable is the more-or-less succulent and edible portion of a plant, not intimately associated with the flower in its development.

This term would cover a root, a stem, a bud, and a leaf or part thereof; for example, a sweet potato (a root), Irish potato or cauliflower (both stems), cabbage and Brussels sprouts (both buds), spinach (a leaf), etc. Peas and lima beans as they appear on the table are neither vegetables nor fruits, although most people think of them as vegetables, but seeds. This term would not include the tomato which is as truly a fruit as a peach, a watermelon, or an orange.

One of the few stumbling blocks in this classification is sprouting broccoli, which consists mostly of stem, but also of flower buds and, often, opened flowers. This is a transition type.

What, then, is a fruit? In the first place, a fruit is derived from a flower. It represents the enlarged or developed pistil or ovary of the flower. Other parts may be so intimately associated with it as to be "part and parcel" of the fruit. It is by no means necessary that it be edible, for the little berries on poison ivy are as truly fruits as are the berries in a cluster of grapes. Neither is it necessary that the structure be "ripe," as is often indicated, for do we not eat "green" olives, pickles, sweet corn, peppers, okra, and many others? Neither is it necessary that they contain seeds for we have seedless oranges, grapes, tomatoes and many others. They always do possess ovules, however, the structure that becomes a seed upon fertilization.

Hence, we can say that a fruit is a developed pistil together with any intimately associated parts. Complicated fruit structures are found in the fig, pineapple, pomegranate, and others.

Now we grant that we do not want such fruits as tomatoes, cucumbers, and peppers in our "fruit" salad but insist that they be served as "vegetables." Actually, the distinction in origin of a vegetable, a fruit, a seed, and a flower is all clear cut from a botanical or technical standpoint. The distinction is relatively simple in most cases.

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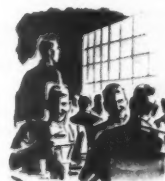
America's railroads, too, have their important part in feeding our nation, our armed forces and our Allies.



It is their job to move the food safely and quickly to camps, and to ship-side for export. It is their job to keep the busy people at home supplied with what the farmer produces.

To do it, plus moving

vastly increased loads of vital war materials, the railroads are exacting every bit of service from the equipment they have.



They are working hard to make up for the thousands of skilled railroad men who are now serving Uncle Sam.

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WANTED—TO BUY CHINESE CHESTNUT SEED. WILLARD MILLER, Route 1, East Sparta, Ohio.

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WANTED—ORCHARD DUSTER. GIVE PRICE AND condition. Box 7, Toboso, Ohio.

## STATE NEWS

(Continued from page 12)

**MAINE**—Maine State Pomological Society convened in Lewiston, February 11-12. Hon. Carl R. Smith, Maine Commissioner of Agriculture, cited census figures that show drastic downward trends in this State's number of apple trees. He discussed the deserved high reputation Maine fruit has for fine quality. He encouraged a program of tree setting to expand orcharding in Maine and the Northeast.

Members of the Executive Committee of the New York and New England Apple Institute were present and the two-day proceedings were highly interesting. Joint efforts of the meeting acquainted the Society and The Institute with problems common to both. —J. H. WARING, Orono.

**MASSACHUSETTS**—Snowfall to date has been below normal and in many orchards there is little snow cover. The weather in January and early February was favorable for orchard work and much of the apple pruning has been finished on some farms. Some growers usually wait until late February to begin pruning in order to lessen the chances of winter injury.

At the present time, crop prospects appear good. Peach buds are alive and if the weather holds, this season should bring a long-awaited crop to peach growers. However, the number of peach trees in the state is now very small. There has been some concern over the effect of the lack of snow cover and the presence of ice on survival of strawberries. —LAWRENCE SOUTHWICK, Amherst.

## CONTOUR PLANTING

(Continued from page 31)

known advantages whenever conditions are favorable for their growth. The organic matter provided by these cover crops, in addition to their other good qualities, keeps the surface of the soil porous and allows more rapid infiltration during a rain. By discing-in a cover crop so that only a part of it is covered by the soil, a very favorable absorbing surface is formed even though the organic matter content of the soil a few inches under the surface is very low. This "stubble mulch" system of cultivation is increasing in use and is particularly effective on clay or clay loam soils. On soils inclined to bake with no cover, crops grown, some sheet erosion occurs between terraces. The soil is deposited in the channels and must be removed before the channel becomes blocked. When the right kind of cover crops are grown, this type of erosion seldom occurs.

For the man who plans to grow fruit on sloping land in a region where heavy rains are prevalent his first decision must be whether to plant on the contour and whether to terrace or not. If he makes the wrong decision, he had better forget about fruit growing.



## RODENT CONTROL

(Continued from page 20)

1½ inch mesh and about 3 feet high is a good barrier in northern regions. A heavier netting would increase the cost but adds to durability. If cotton-tails dig under the fence in fall, a furrow should be plowed against the lower edge. Where lumber is cheap, a picket fence or one constructed of laths and wire, is practicable. Fences offer no protection in deep snow or where drifts form.

The use of cylinders of woven wire netting is the most effective mechanical contrivance for protecting individual trees from rabbits. One-inch poultry netting made of No. 20 galvanized wire is the best to use. Rolls 18 inches or more in width, cut into 1-foot lengths, are generally effective against cottontails. The section is rolled into cylindrical shape about each trunk and fastened at several places by bending and twisting the projecting ends of wire. Sometimes, it is necessary to use stakes or spreaders to prevent rabbits from pressing the wire against the stem and doing injury.

Sections used will vary in size to suit the requirements of any particular locality or kind of tree and species of rabbits. Protection from both meadow mice and rabbits may be obtained by using wire or finer mesh and by pressing the lower edges into the ground.

Veneer and other forms of wooden protectors are effective when used against cottontails. Gunny sacks or other cloth wrappings are of value when well tied to the stem. Inasmuch as these or similar protectors furnish retreats for insect pests, they should be removed each spring.

Finally, feeding rabbits in winter to prevent their attacks on orchard trees is sometimes practiced. One plan is to leave the winter prunings of apple trees in the orchard or to leave piles of them in the adjacent woodlands. Another is to furnish corn, carrots, cabbage or other vegetables in covers during cold weather. These methods must be used with caution because more rabbits may be drawn into the area and cause more severe damage to the trees than the local rabbit population would do.

### MODERN FRUIT PRODUCTION—

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A new and useful handbook for fruit growers including the latest information on propagation, planting, setting, pruning, storage, soils, fertilizers, insect and disease control, improvement of fruits, costs, and all other aspects of fruit production. Illustrated.

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# NATIONWIDE NEWS

(Continued from page 5)

the 12 months from July 1, 1943 to June 30, 1944 was set at about 80 per cent of the 1940 base output of farm implements. That year and 1941 were years of large production.

The 80 per cent figure is an overall one for allocated raw materials and it does not apply to individual items. This authorized production for domestic use in 1944 is double the authorized production for 1943.

However, it should be noted that, since manufacturers were permitted by the 1944-production-year order to complete unfinished quotas authorized for the preceding year, actually the total authorized amount of machinery is approximately 100 per cent of the 1940 machinery output.

These facts should relieve doubts and fears concerning the machinery production program.

★  
**C**OMMANDER Patrick H. Winston, Assistant Executive, National Headquarters of the Selective Service System, has pointed out that farmers and orchardists, now deferred from military service because of occupation whose agricultural activity does not conform to national aims, may be called on in the near future to increase their production goals or to face cancellation of their Selective Service deferments.

★  
**T**HE War Food Administration has removed the Government distribution control on five farm implements. The order leaves distribution entirely in the hands of the manufacturers. The items concerned are one-way disc plows or tillers, cultivators, mold-board plows, stationary threshers, and stationary pea and bean threshers.

★  
**F**RUIT GROWERS and farmers, operating trucks in areas where tire recapping facilities are inadequate or unavailable, now may obtain a ration certificate. This will permit them to exchange with dealers a tire which needs recapping for a used tire or a new "war" tire, according to the Office of Price Administration. A "war" tire is one made from reclaimed rubber.

**T**HE Canadian Horticultural Council has invited the United States Department of Agriculture to take part in a joint conference in Ottawa from February 29 through March 2. The Council is an overhead organization of fruit and vegetable representatives in Canada. There is no comparable organization in the United States, but the USDA is sending representatives of both the fruit and vegetable industries.

One of the purposes of this conference is to give United States government officials and industry representatives an intimate understanding of the purposes, composition and operational methods of the Canadian Horticultural Council. The USDA anticipates that a like organization eventually will be needed in the United States.

Mutual problems, associated with the exchange of fruits and vegetables between the two countries, and the probable position of North American producers and exporters when international trade can be resumed, will be discussed.

★  
**N**ATIONAL Apple Institute's President, Reuben Benz, and the International Apple Association's Secretary, Samuel Fraser, recently conferred in Chicago in regard to combining the efforts of the apple industry's two leading organizations in negotiations with War Food Administration and the Office of Price Administration.

An operating agreement was established wherein both organizations will cooperate in the policies and methods which best will serve the country and the apple industry.

★  
**S**TRAWBERRY growers will be interested to learn that extensive experiments, conducted at the New York State Agricultural Experiment Station, Geneva, indicate that the Howard strawberry is one of the very best strawberry parent variety.

More than 70 crosses were made during the seven-year period. A larger proportion of seedlings from

crosses in which the Howard was one of the parents proved superior than any other parent variety. A cross between Sparkle and Howard proved especially good. Nine crosses were made with Howard as one of the parents, producing 1,692 seedlings of which 49 showed sufficient promise to merit further testing.

Sparkle also proved to be an unusually good parent and has transmitted its high quality, attractive appearance, and dark color to many of its seedlings.

★  
**A**LTHOUGH farm implement manufacturers to a large extent have turned their plants over to the making of military trucks, bulldozers, etc., accelerated production by leading tractor makers promises to fill the 1943-44 quota. The production scheduled between July 1, 1943, and June 30, 1944, approximates or exceeds the wheel tractor production of every year during the 13-year period from 1927 to 1939 inclusive, excepting the year 1937. Nevertheless, production of crawler-type tractors for non-military uses is inadequate because of military demands for this type of equipment. But, according to reports from the Office of Information, Washington, D. C., the supply of repair parts for these tractors is steadily improving.

Production is being dispatched in every possible manner by the War Production Board Specialists at major manufacturing plants where the war food program is regarded as second only to prime military equipment, and the authorized production of 209,000 wheeled tractors is expected to be completed by June 30, 1944.

★  
**A**PPLÉ growers throughout the Nation should buy every available used basket and box, beginning NOW. Unless they order ahead now, fewer boxes can be put out, according to the United States Department of Agriculture. The same facts apply to crates.

★  
**T**HE 1943 raisin production is expected to be close to 700 million pounds and the War Food Administration reports that West Coast packers are authorized to sell to civilian trade channels an additional 54 million pounds of raisins from the 1943 production. The new allocation is made because the present supply will fill military, civilian and lend-lease requirements, due to a record 1943 crop.



# HERE'S HOW YOU MAY QUALIFY TO PURCHASE A NEW CLETRAC TRU-TRACTION TRACTOR OR ANY OTHER TRACK-TYPE TRACTOR FOR FARM USE

**T**HE Government has established limited state quotas of track-type tractors for agricultural use. These tractors are available to farmers who can qualify to purchase them if they will make the necessary application on WPB Form 1319. Your Cletrac dealer will gladly assist you in filling out these forms, which can be obtained from your local U. S. D. A. War Board or tractor dealer. Here's substantially what you must report on your application:

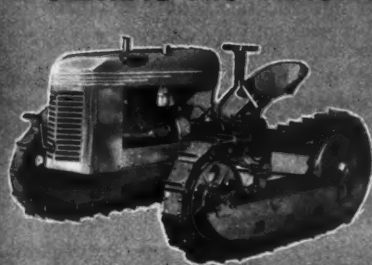
1. Prepare this application in five copies, four of which are to be submitted.
2. State whether you can use a wheel-type tractor, and if not, why not.
3. Include any other information relating to your need for a track-type tractor.
4. State total acreage of your farm and acreage of each kind of crop grown.
5. State number head of livestock and number of each kind produced.
6. Give year, make, model and size of tractors you now own.
7. State whether or not an old tractor will be traded in.
8. State whether you can use your present tractor by repairing it.
9. How much more can you produce by owning a track-type tractor and why?
10. State your first, second and third choice by make of track-type tractor, since your first choice might not be available.

After you have filled out your application it is presented to your County U. S. D. A. War Board. This Board submits it with a letter of approval or denial to the U. S. D. A. State War Board. The latter Board in turn sends your application to the War Production Board at Washington recommending the release of the tractor, if the need is considered essential and the tractor is available. If approved, the application is returned to the applicant, who must give it to the dealer as authority to receive the tractor.

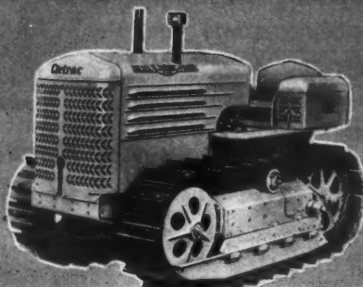
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**Dow Dry Lime Sulfur**—Made from a concentrated lime sulfur solution by a special process. Finely divided, cannot freeze, easy to handle, dissolves readily in cold water. Recommended for most fungous diseases; also combats such insects as red mite and rust mite.

**DN-111**—a knock-out for the red mite pest. Even if you use dormant oil sprays, it is safer to include DN-111 in your spraying program to prevent a build-up of red mites during summer months.

**Bordow Too for Cherries**—A copper fungicide highly effective in the control of leaf spot (shot hole fungus) on cherry trees.

**Where Dormant Sprays Are Needed** to control scale, aphid, red mite, and bud moth—none more reliable or effective than DN-Dry Mix (Wettable) and Dowspray Dormant (DN-Oil).

Your dealer or state experiment station will be glad to advise you.

